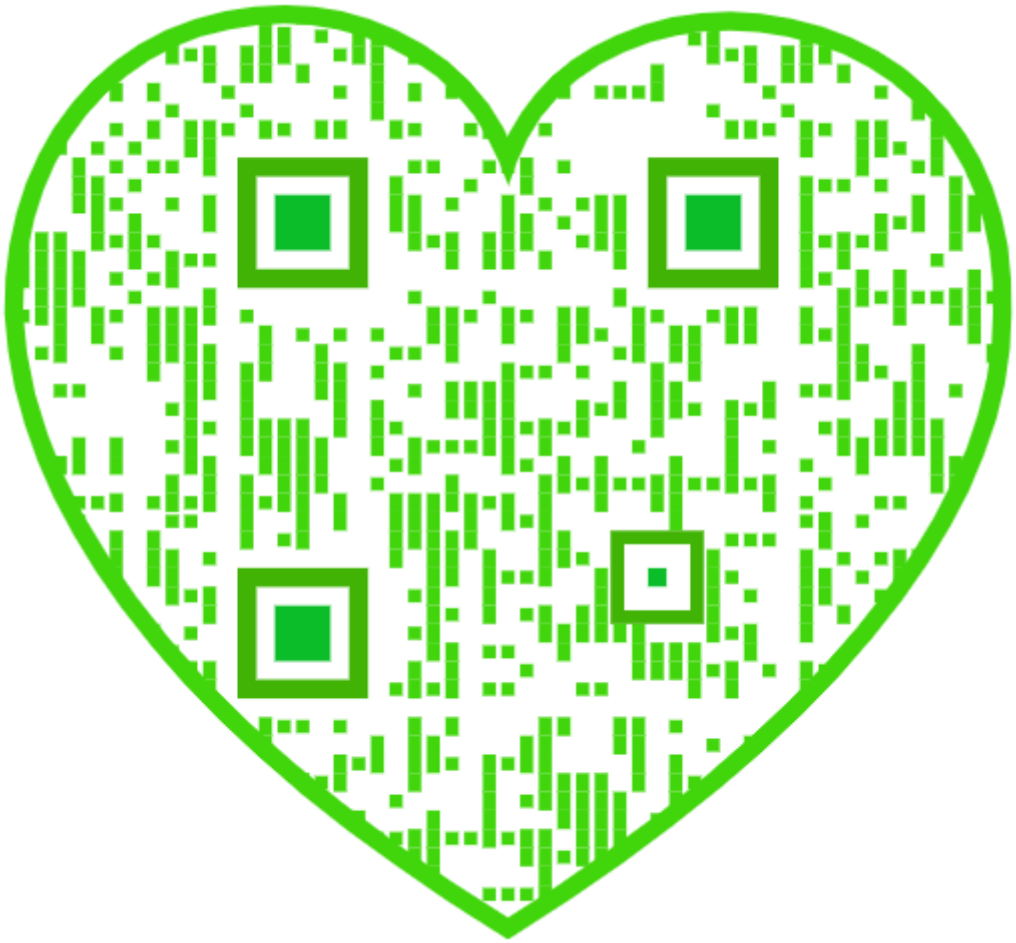

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PACIFIC COAST STATES

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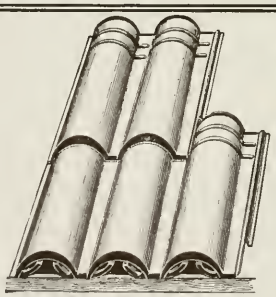

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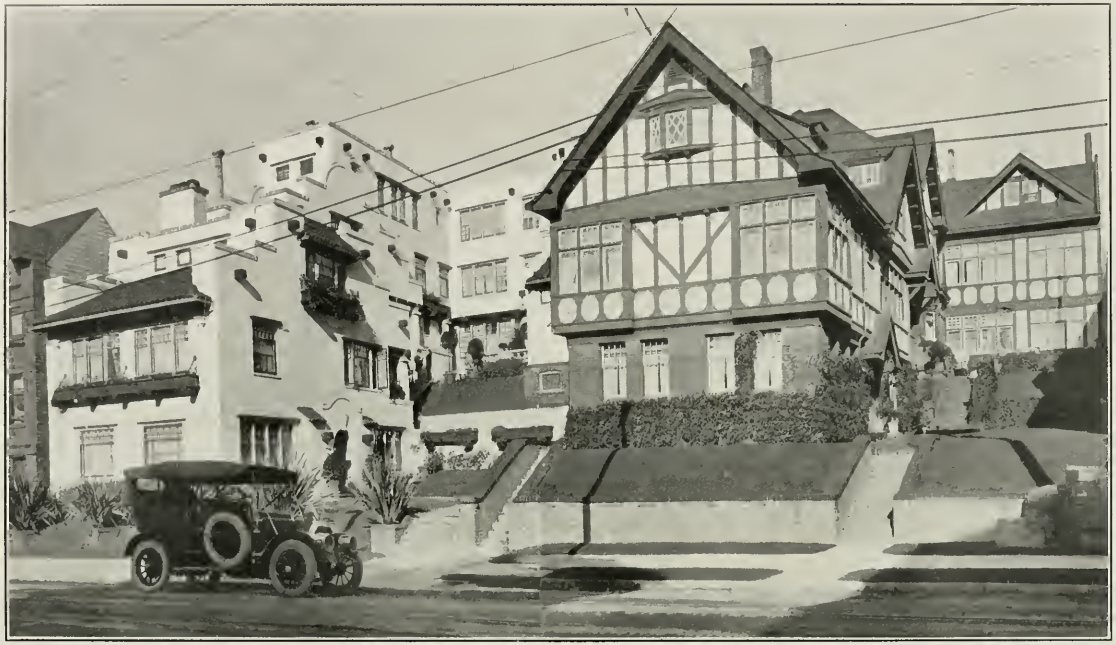

Frontispiece,
The Architect and Engineer of California,
February, 1912.

"LA HACIENDA" AND "THE TERRACES," APARTMENTS, SAN FRANCISCO, CALIFORNIA
Henry C. Smith, Architect

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THE
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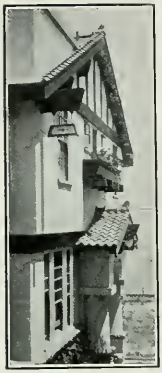
VOL. XXVIII. FEBRUARY, 1912. No. 1.

Unique Hillside Buildings

By HORATIO F. STOLL.



Detail of Marsh Apartments

WHEN Jean Vioget made the first street survey of San Francisco his irregular delineation included about half the district within the limits bounded by Montgomery, California, Powell and Broadway. He made Kearny the principal thoroughfare, because it was the flattest and safe above high-water mark. The cross streets were set out at nearly right angles.

Vioget planned only for the needs of the earliest settlers, before even the gold-crazed pioneers arrived in '49, and gave San Francisco its first impetus. But later, when the population outgrew the meager confines of the little village, new streets were opened, running due north and south, and east and west.

The hilly nature of the city was given absolutely no study or consideration. Instead of following the example of the hill cities of Europe, especially in Italy, and laying out circular roads that would conform to the contour of the hills, the right-angle plan was rigidly adhered to. It was easy to map out the city in this fashion on paper, but when the streets were actually cut through, the steep grades made many impracticable for use either by pedestrians, vehicles or cars.

In some sections this difficulty has never been overcome, while in other districts cable cars solved the transportation problem, and later the electric trolley cars were found available. An immense amount of heavy grading has also helped to make many streets practical and accessible.

Visitors, in wandering about the city, marvel at the strange appearance of many queer looking streets. Some dip through deep canyons; others present the appearance of a series of terraces, having a sheer fall for hundreds of feet on one side, with a towering slope on the other; while still others, crossing the backbone of narrow ridges, are flanked with houses whose foundations are considerably below the street level.

Some of these hill lots look absolutely hopeless from a building standpoint. I remember passing the Hammond lot, on the south side of Vallejo street, near Fillmore, when they were digging the foundation for the five red-tiled residences that today are grouped about a sunshiny court. There were two huge holes on either end of the lot, with a steep slope between, while at the upper end the earth was roughly braced to prevent a land-

Present Site of Hillside Apartments, Looking up Taylor Street, from Green, San Francisco

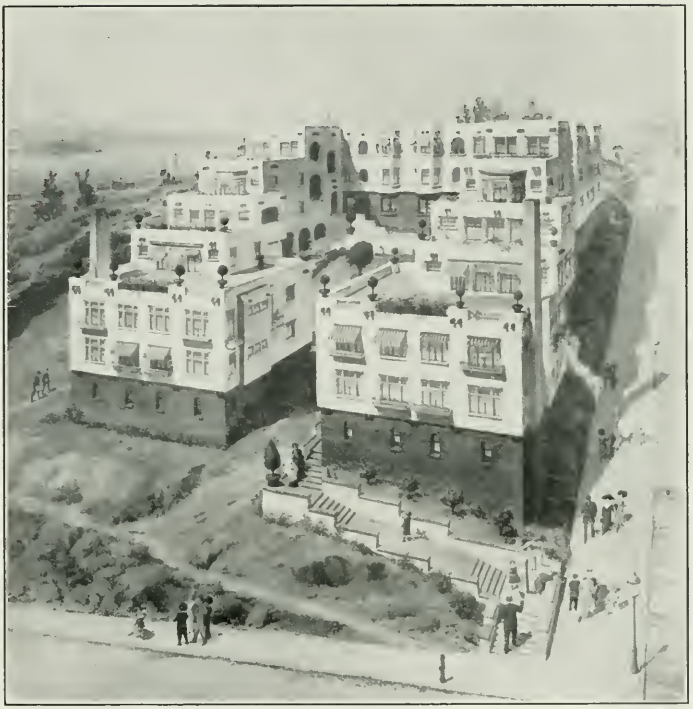
slide. Beyond loomed up the unattractive yards and backs of the houses that face on Broadway.

Some months later, when we returned home from our summer sojourn in the country, I strolled past this same spot and was amazed to see the transformation. The unpromising hillside had disappeared and in its place was a series of charming two-floor, cement-plastered residences, containing from six to nine rooms. All were rented and had an air of cosiness and refinement that made them very attractive.

Each had its individual entrance on the open court, which is artistically decorated with terra cotta pots filled with close-cropped bay trees and window boxes overflowing with flaming geraniums and creepers.

It is surprising that more of our San Francisco homes are not ornamented with these charming window boxes, for they add a welcome touch of cheery color to our streets, and are a constant reminder to visitors of our favorable climate.

Many of the streets of London and Edinburgh during the summer months are ablaze with blossoming flower boxes, and in New York, the National Plant, Flower and Fruit Guild has done much to encourage the purchase and cultivation of window boxes. In the tenement district, the guild not only puts the box in place, but all through the summer one of the visitors, making her rounds, comes to look it over to see that it



Unique Hillside Apartments in Pueblo Architecture, Green and Taylor Streets, San Francisco
Henry C. Smith, Architect

has proper attention and enough sun and water, and if not, the reason therefor. Another part of the visitor's duty is to keep a list of the most successful boxes. This is to aid in the distribution of prizes, which have been given every year to the best window on the west side, the best on the east, north and south, as well as the best one tended entirely by children.

One of the most striking sights of our Chinese and Latin quarters is the picturesque window boxes and porch gardens that brighten the streets, and it is good, indeed, to see men like Henry C. Smith, who has come to be known as the "hillside architect," encouraging their use in the Western Addition and other sections of San Francisco.

Mr. Smith, by the way, has just completed the plans for another unique hillside building that will soon arise on the steep 50-vara lot that lies between the residences of Governor Hiram Johnson and Livingston Jenks, on the southeast corner of Green and Taylor streets.

The structure will consist of forty apartments, ranging from two to five rooms, and will be six stories high, receding as it climbs the precipitous

Site of Apartments for Mr. A. B. Hammond and Dr. L. Mace, San Francisco

hill. It will be set back from the edge of Green street twenty feet, and eight feet on Taylor street, to get a rock foundation and not disturb the solid ground, which will not be bulkheaded, but left in a rough state and draped with vines and creepers.

The solid, substantial stone retaining walls everywhere on Russian Hill give an excellent idea of the possibilities of this treatment. Trailing roses and sweet-scented jasmine clamber over the sides and contrast strongly with the ivy and orange, pink and lemon streamers of the ampelopsis that sway gracefully with every breath of air. It is wonderful what a softening effect these vines and gay blossoms make on cold, matter-of-fact masonry.

All the apartments will open on an immense court, 56 x 70 feet, which will resemble an Italian garden and be ornamented with an abundance of greens and flowers. Each apartment will have from two to five rooms, and will be provided with a little balcony or front garden, formed by the roof of the lower apartment, from which it will be possible to get a wonderful view overlooking the modest garden of Governor Johnson and sweeping around past Telegraph Hill, Angel Island, Belvedere and Sausalito to Mt. Tamalpais.

The residents will reach their homes from Green street by a winding pathway through the garden, or if they desire to save time they can go through the tradespeople's entrance, at the rear of the building on Taylor street. Instead of a steep climb, the stairs will be broken into short flights with rests, and to facilitate the delivery of supplies and the furniture of tenants, an elevator will be installed in the middle entrance. This is absolutely necessary, in view of the fact that Taylor street, above Green, presents the appearance of a huge canyon, and the top story of the building will be just 110 feet above the Green street level.

Apartments for Mr. A. B. Hammond and Dr. L. Mace, San Francisco
Designed by Henry C. Smith

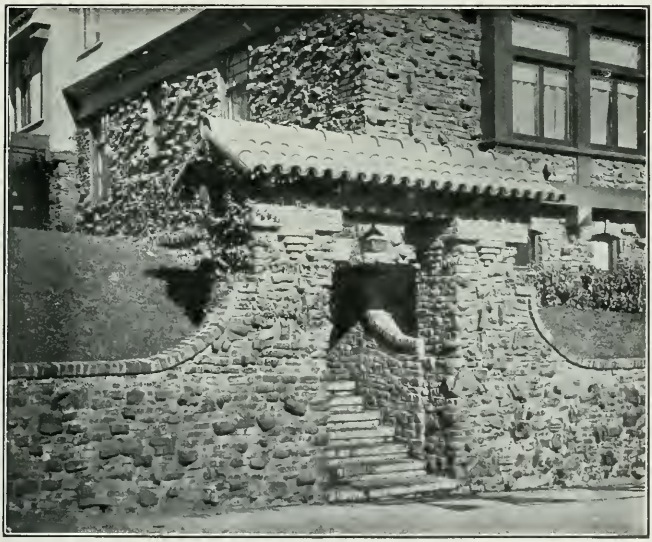
Mr. Smith had less difficulty in planning what are known as the Heights Apartments, on the west side of Hyde street, between Greenwich and Filbert. A winding path leads to the top of the lot, which was practically level. The main problem here was to get all the sun possible and to provide a marine view from each of the six apartments. To secure the desired exposure and outlook the shape of the building was made an irregular "H," with the northern half approaching nearer the sidewalk than the southern part. The rear portion of the graceful structure is raised up to get the marine view and morning sun. The view of the Berkeley Hills, the bay, and out past the Golden Gate is superb, and those who live along this promontory have the satisfaction of knowing that their outlook can never be spoiled, since it is one of the highest parts of the city and the drop of land toward Larkin street is abrupt. Only a skyscraper could do any damage, and one will probably never be found necessary in this quiet neighborhood.

In building the Hunter Apartments, on Washington street, near Taylor, Mr. Smith's principal aim was also to secure a marine view for each of the three stories. The first half of the building, which was completed some time ago, is impressive in height, color and outline. It is so constructed that when the second half is built on the other side of the court it will run in three tiers down the eastern slope of the steep Washington street hill, leaving the view of the apartments practically unobstructed. The light gray walls, green-painted beams and red-tiled roof give the building a warm Spanish feeling in strong contrast with the somber, grim-visaged Kellogg flats that serve as a background. The one seems the creation of warm-blooded Latins, the other the crude, cold expression of a primitive civilization.

Condition of the Hunter Lot Before Building was Erected

Frank and Louis Hunter Apartments, San Francisco
Henry C. Smith, Architect

Flat Building for Mr. A. J. Folk, San Francisco Henry C. Smith, Architect



Garden Entrance to the C. Zeimer Apartments, San Francisco Henry C. Smith, Architect

A Row of High Class City Flats, San Francisco
Henry C. Smith, Architect

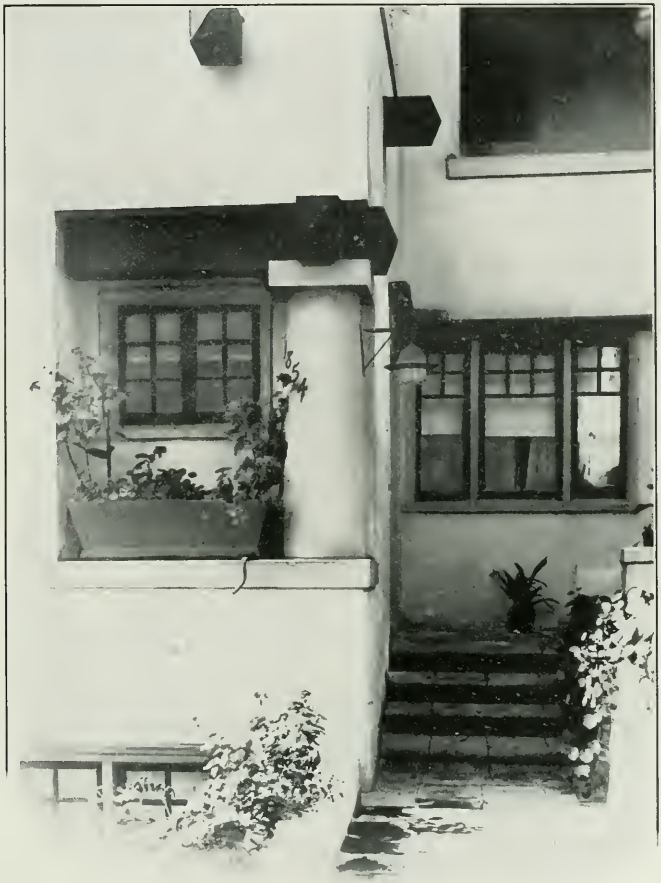
Residence of Mr. E. D. L. Johnson, Presidio Terrace, San Francisco
Henry C. Smith, Architect *Geo. W. Boxton, Contractor*

Entrance to Hunter Apartments, San Francisco — Henry C. Smith, Architect

Entrance to Marsh Apartments, San Francisco

The Marsh Apartments, San Francisco
Henry C. Smith, Architect

Entrance Court to Marsh Apartments, San Francisco



An Entrance to "La Hacienda" Apartments, San Francisco
Henry C. Smith, Architect

One of the most striking features of the Hunter building is the novel port-hole retaining wall in which Mr. Smith has included a red-tiled entrance gable that effectively breaks the distance between the klinker brick archway and the lofty basement windows.

But perhaps the most unique of all his terraced buildings is the La Hacienda apartments Mr. Smith erected for himself out on Sacramento street, near

An Entrance to "La Hacienda" Apartments, San Francisco
Henry C. Smith, Architect

Den of Henry C. Smith, in "La Hacienda" Apartments, San Francisco

Dining Room of Henry C. Smith, San Francisco

Maple. They adjoin the English flats he built years ago. This was his first attempt at hillside construction, and it proved so successful that he found it profitable to specialize in this type of building.

The two distinctive structures harmonize nicely, although they have nothing in common save a hillside location. The La Hacienda apartments occupy the north, east and western portion of a lot 55 x 127 feet. There is a back yard, and every foot of extra space is utilized by a central terraced court that from the sidewalk opposite gives the lot the appearance of being at least twenty feet wider than it really is. The exterior walls are finished in klinker brick and cement, with redwood beams and cornices left natural. The irregular roof is of bright red tile.

The largest flat, occupied by Mr. Smith, contains fourteen rooms. The others have nine, eight, six and five rooms, respectively. Each flat has its separate Mission entrance, handled in an individual manner. Heavy oak doors, ornamented with immense iron hinges and knockers, open into the reception halls and living-rooms, with large inglenook fireplaces and high backs built in. The ceilings are heavily beamed, and the woodwork is beautifully stained a rich dark brown. Not a bit of moulding is used in the entire building, and the millwork was all made on a circular saw, and left perfectly square and plain.

The most typical Mission room in the flats—in fact, the only one in which any real attempt has been made to carry out the simple ideas of the padres—is the architect's den or library. It is diagonally beamed, and contains a big open cobblestone fireplace that would prove a delight to any man who enjoys a cosy lounging place where he can toast his feet in luxurious ease, or read to the rhythm of a crackling fire. Bookcases and seats are

Living Room in Residence of Mrs. Joseph Musto, San Francisco
Henry C. Smith, Architect

Dining Room in Residence of Mrs. Joseph Musto, San Francisco
Designed by Henry C. Smith

Residence of Mrs. Joseph Musto, Overlooking the Bay, San Francisco
Designed by Henry C. Smith

built in the wall, and four Mission bell chandeliers, especially designed, shed a soft radiance at night. Heavy Mission furniture, which is usually better suited to halls or clubrooms, is distributed about the room. The long straight lines and the rich leather upholstery add not a little to the "atmosphere" of the den.

In planning the arrangement of his flats, the architect constantly kept in mind the necessity of plenty of light and sunshine in every room. The outlook from the windows overlooking the court is dazzling on a sunshiny day, for the cream-colored plastered walls reflect the sunlight wonderfully.

The court is charming. It is laid out in terraces, the first being a flat lawn, dotted along the edge with klinker brick pots holding palms. The second is a sloping lawn running up to a cement wall that is draped in nasturtium vines; while the third is a circular center garden filled with bright red geraniums. Formal looking bay trees, cactus and palms in terra cotta pots, and an abundance of flower boxes, brilliant with red geraniums and trailing vines, complete the floral decorations. The walks are paved in large square tiles of a rich dark brown.

These unique Mission apartments have helped Mr. Smith to popularize the open court in San Francisco. They are an excellent object lesson and show at a glance how the most unpromising hillside may be utilized to advantage in building sunny, livable apartments that possess grace and space, insure privacy and afford a cheerful outlook from every window.

To Crown Nob Hill with Monumental Edifice

¶ Projected building pronounced the most desirable and necessary of all contemplated structures for 1915 Panama-Pacific Exposition.

HENRY C. SMITH, Architect

This building is planned to occupy site of the San Francisco Institute of Art. The structure would be 450 feet high, 725 feet above the Bay and second tallest to Eiffel Tower.

Monumental Structure Planned for San Francisco

By CHARLES HOLLOWAY, JR.

Henry C. Smith, Architect

A NUMBER of prominent men of San Francisco—men who are interested in the development of the metropolis as a city of beauty and culture—are discussing a plan which may bring to Nob Hill a rare distinction in art and architecture, which is simply art applied to the decoration of buildings. The plan is to have Nob Hill crowned with an architectural monument of surpassing beauty, one which will make that eminence the most distinguished in the western hemisphere, a very shrine of art, for the plan is to rehabilitate the San Francisco Institute of Art and School of Design at its site at California and Mason streets, to house it in a beautiful building of French classic design, a building which can be seen from the bay and the city, a building from which can be surveyed the magnificent panorama of the Straits that form the blue and emerald ante room behind the Golden Gate; the rising slopes of Marin, culminating in the crest of Tamalpais; the blue sweep of the bay, interrupted with the flowing lines of Angel Island and the sudden upstarting of Alcatraz, placed like a mediaeval fortress of a proud and recluse duke on the bosom of the waters; to the east the terraces of habitations that are Berkeley and Piedmont, with grey Oakland and the wooded outlines of Alameda to the flank; while in the middle distance is the water, again, cut with the white paths that the ferry boats have laid on the blue surface of the bay.

This building will be monumental in design according to the plans of Architect Henry C. Smith, which the proponents of the idea want adopted for the structure. Its height will be 450 feet to the base of the flagpole, or 725 feet above sea level, and at the top will be an observation lantern 25 feet in diameter, from which the entire city from Telegraph Hill to Twin Peaks and the Potrero can be surveyed, as well as the bay washed counties. The lot is 206 feet facing on California and Pine streets and 275 feet deep along Mason street. The studios of the art school would be located on the Pine street front of the building, while beneath them on that side would be an auditorium seating from 5000 to 6000 persons. The art galleries for the exhibition of paintings would be located in the first and second floor on the California street front, and the floors above would be devoted to statuary halls and museums for objects of art, minerals, gems and other specimens of educational value.

It is the plan of Architect Smith to construct the building of California granite and marble, and to finish the interior in the handsome California stones, onyx and California marbles. The total cost, it is estimated, would be $1,500,000.

Residence of Dr. Adelaide Brown, San Francisco
Henry C. Smith, Architect

That is in brief the plan of the structure which, if erected, will give San Francisco the most magnificent home of art in America on the most magnificent site for an art museum in the world.

The magnificent site 725 feet above sea level, now has only an unprepossessing, squatty structure, that represents today the art center of the west. The site itself was incentive enough for Architect Smith to start work at once. The result of his inspiration has given to the people the design that we may consider today. It took days and nights and weeks to perfect the design of this grand building. But it was done, and it was good to look upon, and the worry and delays of the work were forgotten.

The lot on which the building would stand would cost the builders nothing if the exposition company or others who through motives of civic benevolence would join in the project. It would be a splendid site for a fine arts building, as it is centrally located, near the downtown hotel district and the business center of the city, reached by several car lines and not beyond walking distance of the residences of large numbers of citizens. Those facts should appeal to the exposition directors, it is urged by those interested in this monumental enterprise.

If we had this building San Francisco could invite the entire world to contribute its art treasures, which only a fireproof building should house. The building would draw from the bank vaults and fireproof storerooms of San Francisco alone a million dollars' worth of art treasures that are now being stored for want of a safe place in which to exhibit them.

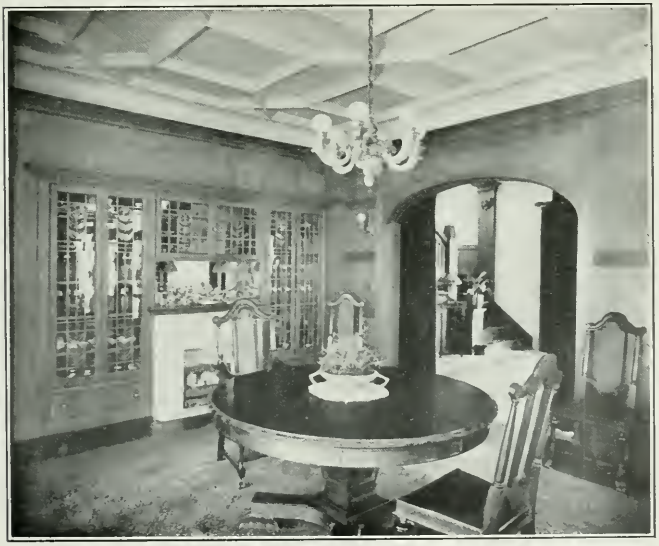
The exposition company should build this building. A museum of fine arts would be the greatest advertisement to San Francisco that it is possible to have. If we have the greatest art gallery in the world it should make California the art center of the western hemisphere, and with its picturesque and commanding position and monumental character the temple would command the interest and attention of every person coming to San Francisco.

The Blumberg Flats, San Francisco
Henry C. Smith, Architect

The Lackmann Apartments, San Francisco *Henry C. Smith, Architect*

Residence of Mr. G. Musto, San Francisco *Henry C. Smith, Architect*

Living Room, Residence of Mr. G. Musto, San Francisco



Dining Room, Residence of Mr. G. Musto, San Francisco

Breakfast Room, Residence of Mr. G. Musto, San Francisco

Garden Entrance, Hartman Residence, San Jose, California
Henry C. Smith, Architect

South View, Hartman Residence, San Jose, California
Henry C. Smith, Architect

North View of the Hartman Residence, San Jose, California

The Moore Residence, Berkeley, California
Designed by Henry C. Smith, Architect

Lounging Porch, Moore Residence, Berkeley, California

Living and Reception Room, Moore Residence, Berkeley, California

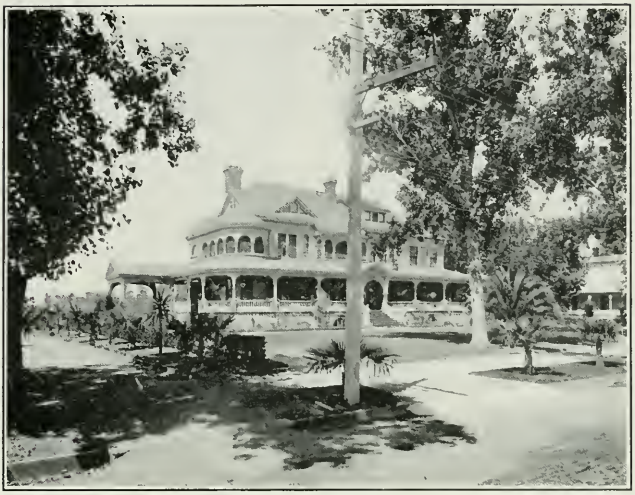
Dining Room, Moore Residence, Berkeley, California

City Flats for Dr. French, San Francisco
Designed by Henry C. Smith, Architect

Entrance to Zeimer Apartments, San Francisco
Henry C. Smith, Architect

Residence Flats for Mr. M. Getz, San Francisco
Designed by Henry C. Smith, Architect

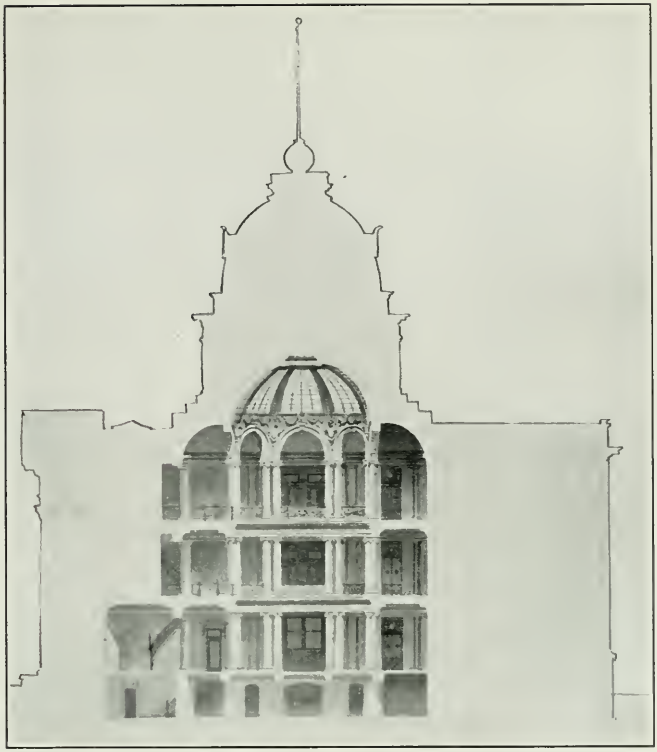
Leesmont Apartments, San Francisco
Henry C. Smith, Architect



Coleman Residence, San Jose, California
Designed by Henry C. Smith, Architect

"Far Hills," Country Estate of Henry C. Smith, Los Gatos, California

Suggestion for Kern County Court House, Bakersfield, California
Henry C. Smith, Architect



Cross Section, Kern County Court House, Bakersfield, California
Henry C. Smith, Architect

High School, Redlands, California
Designed by Henry C. Smith, Architect

Antonio Laiola Apartments, San Francisco
Henry C. Smith, Architect

Design for an Apartment Hotel, San Francisco
Henry C. Smith, Architect

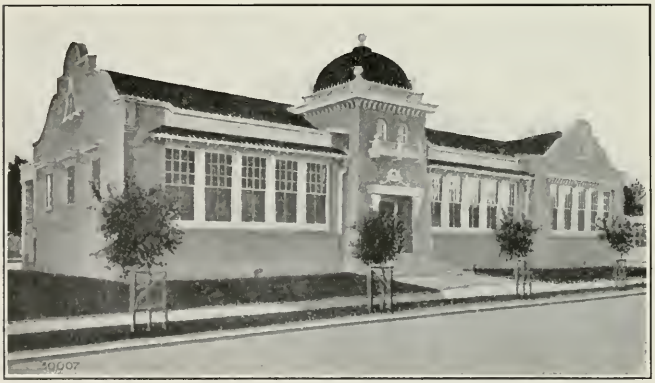
Entrance to Franklin School Building, Oakland, California
Designed by Henry C. Smith, Architect

Pomona High School, Pomona, California
Designed by Henry C. Smith, Architect

Grammar School, Petaluma, California
Designed by Henry C. Smith, Architect

Whittier High School, Whittier, California
Designed by Henry C. Smith, Architect

School Building, Oakland, California
Designed by Henry C. Smith, Architect



Grammar School Building, Modesto, California
Designed by Henry C. Smith, Architect

Accepted Design for Union High School, Haywards, California
Henry C. Smith, Architect

Carnegie Library, Haywards, California
Designed by Henry C. Smith, Architect

Colusa Library Building, Colusa, California
Designed by Henry C. Smith, Architect

Remodeled Crematory at Cypress Lawn Cemetery, San Francisco
Henry C. Smith, Architect

West Side Grammar School, Turlock, California
Thos. B. Wiseman, Architect

Moronet Hotel, Bakersfield, California
Thos. B. Wiseman, Architect

Wasco School House, Kern County, California
Thos. B. Wiseman, Architect *Oscar Parlier, Contractor*

Abstract of an Essay on Flats

By GEORGE FITCH.

(Copyright, 1912, by George Mathew Adams.)

FLATS are an invention whereby people who live in crowded cities can be piled up in layers like pancakes.

A flat consists of a collection of living-rooms all on one floor. A flat building consists of from six to sixty sets of rooms all under one roof and under the overlordship of a janitor who lives in the basement and doses the furnace with coal on the homeopathic plan. A really expert janitor can run a twelve-flat furnace all winter on a wagon load of coal and can so chill the tenants when they come down to complain that their rooms will seem tropical when they return to them.

Flats are built of brick, wood, stone, strawboard, felt and tissue paper, the latter being used principally for partitions. An economically built flat building is usually provided with a lightwell which is entirely filled with conversation. By means of this well the occupant of the top flat can hear what the husband of the first floor says when the coffee doesn't suit him, and when the woman in number 2 tells her late returning spouse that he is a brute the women in numbers 1, 3, 4, 5, 6, 7 and 8 quiver with simultaneous indignation.

Flats have handsome hallways fitted with New Jersey Turkish rugs, and back porches where one may have a garden consisting of a geranium. They are also provided with bathtubs and two kinds of water, cold and not so cold. In the cities, owing to the high price of ground, aldermen and building material, the rooms in a flat are sometimes very small—so small that when the daughter is playing the piano the mother has to wash the dishes gently for fear of splashing on the music—so small that the members of the family have to be measured for the bedrooms as they would for vests, and any one weighing over 180 pounds has to work himself into the bathroom by means of glove powder and a shoe horn.

More About Architectural Acoustics

THE question of acoustics is being given a great deal of serious study by architects, particularly those who specialize in auditorium, theater and church work. The article in the January Architect and Engineer, by A. F. Oakey, was one of the best discussions of the subject that it has been our good fortune to read in recent years. The paper represents the fruits of long study and much experimenting. In line with Mr. Oakey's contribution, the following abstract of a lecture on "Architectural Acoustics," by Prof. Wallace C. Sabine of Harvard University, will be found most interesting:

In his last lecture Professor Sabine explained the acoustics of Symphony Hall in Boston, which, he declared, was planned with a knowledge of conditions, and it is much changed from the prospective forms. The old music hall had been a good one, and the Gewandhaus in Leipsic was another. The new hall was placed between the two in point of reverberations. Experiments with the Symphony orchestra were made in various auditoriums in the country, and at the same time the opinion of Mr. Gericke was taken for the quality of each hall. It is another notable compliment to human judgment that the trained ear and the scientific measurements agreed in their determination.

The older methods of correcting acoustical defects by wires, cheesecloth or by means of sounding boards were declared to be inefficient, but traditional. Wires are of no practical effect; there is no rule for quantity or tension. Cheesecloth is in the line of improvement, but so slight as to be practically negligible, while sounding boards may be even worse than useless. The dainty, decorative parabolic board set up back of the speaker is much too small to accord with his deep voice, while on the other hand it is attuned to whispers, and instead of sending the voice of the preacher over the congregation, it catches the whispers of any in its line and focuses them directly in the speaker's eye.

A great deal of architectural copying is done with little understanding of the subject of acoustics, the lecturer continued. There is now much building of fine churches in this country after the models of Byzantine or Gothic architecture. These in Europe are permissible because there no one expects to listen to the sermon. In this country it is the wish to hear the sermon, so that a church which would not be considered bad on the continent becomes here intolerable.

Achievement in the correction of imperfect auditoriums was the thing on which architects could pride themselves most, as far as acoustics were concerned. In a fine Gothic cathedral by a Boston architect the sound mounted to the roof and being reflected, filtered slowly down to the audience with distressing effect. Breaking the surface and addition of absorbing material in the way of decorations has improved it. The great tabernacle in Salt Lake City was defective, but the building of galleries to give greater seating capacity remedied the trouble.

The discussion ended with a brief consideration of the Greek theater, which has been held up as a model. The speaker argued that it was not a test of the acoustical properties to try sounds in a ruined theater in which some of the original walls may be missing—in a place where there is grass growing along the seats. The true test is in the complete structure, with its audience and during the processes for which it is intended. The notion that one can copy a Greek theater in outline, and in trying to adapt it to the inclement weather of northern latitudes cover it with a roof and still have it a Greek theater is altogether wrong.

The Portland Auditorium Competition

We have before us a letter from Mr. Frank Miles Day, Chairman of the Standing Committee on Competitions, American Institute of Architects, stating that Mr. Cahill's criticism on the award rendered in the Portland Auditorium Competition had been submitted to that Committee which, in turn had placed the matter before the Committee on Practice, Mr. Burt L. Fenner, Chairman. The main question, therefore, as to whether the jury of awards did their duty in the Portland Auditorium Competition is to be settled by a thorough investigation made by the most important of the standing committees of the Institute. The members of this committee for 1911 were Burt L. Fenner, of New York, Dwight H. Perkins, of Chicago, D. Everett Waid and Robert D. Kohn, both of New York and John Lawrence Mauran of St. Louis, Mo.

Regarding the actual construction of the Auditorium, advices from Portland show that all action is indefinitely tied up in a chaotic tangle of uncertainty. And this in the face of a public opinion enthusiastically in favor of an auditorium without delay and for which bonds to the extent of $600,000 have been voted and for which the city already owns a whole block for part use of the proposed building! But the Auditorium Commission are divided among themselves as to the site and the money needed for the building; while the plans they have adopted do not fit any site nor come within the appropriation.

As to the architects who wasted time and money in a competition wherein they had no earthly chance of winning so long as they adhered to the rules, the letters printed below speak for themselves.

A Portland contemporary alludes to "one man criticism." True, there is only one man who approves the conduct of this competition, that is Mr. John Graham of Seattle. Like the disagreeing juryman, no doubt he finds the other eleven very unreasonable and obstinate. The same contemporary states that the American Architect "refused to print" the criticism. The facts are as follows. Mr. Cahill's letter to Mayor Rushlight of Portland was set up in type and a galley proof sent to Mr. Willis Polk, one of the jury, for his explanation, defense, refutation or whatever could be printed along with the criticism itself: a fair, open and sportsmanlike procedure. Mr. Polk sent a proof to the "American Architect," at least he says he did. Meanwhile the Oregon State Chapter hurriedly put through a formal approval of the conduct of the Competition. Now the president of the Oregon State Chapter is Mr. Ellis Lawrence, the Professional Adviser and one of the Jurors on the Competition; and Mr. Logan, the secretary, is the winner of the second prize.

The American Architect, to whom Mr. Polk had written, printed this resolution with a little rider of its own indorsing this approval. Of course.

Said contemporary then goes on to print a statement from the deputy city auditor as to "how the plans were handled."—No pecking into the packages, or opening of envelopes, etc., etc., etc.

To what type of intelligence does this nonsense appeal to? Mr. Cahill's criticism was confined to the plan selected, regardless of anything else and with no insinuations or question as to any feature of the Competition and its conduct whatever except as to the work of the jury which selected a plan which violated several mandatory conditions of the program and was faulty and impracticable in many other particulars all duly enumerated and open to verification.—Editor.

From the President of the American Institute of Architects.

New York, January 11, 1912.

Mr. Bernard J. S. Cahill, 571 California St., San Francisco, Cal.

Dear Sir—I have to acknowledge receipt of your favor of the 5th instant with leaves from The Architect and Engineer containing your article on the Competition for the Portland Auditorium.

From what you say, I should infer that the jury, in the opinion of many who have looked carefully into the matter, had not faithfully and conscientiously fulfilled the duty which they had undertaken; this would appear to be conspicuously the case in regard to article 31 of the program, quoted on page 49. This article was mandatory, and any design which violated it should have been excluded from consideration without regard to its merits.

I will send your letter to the Committee on Competitions for their consideration.

It seems to me, also, that there is proper ground for a suit against the city of Portland for breach of contract.

All these conclusions rest, of course, on the assumption that the facts in the case are correctly stated in your article. Your obedient servant,

WALTER COOK, President.

From A. Ten Eyck Brown, Atlanta, Ga.

Mr. B. J. S. Cahill, Architect, Portland, Ore.

Dear Sir—In re Portland, Oregon, Auditorium Competition, I have read your open letter of November 9th, in the Architect and Engineer, published in San Francisco, and after carefully checking over the criticisms you make I have no hesitation in saying that I fully agree with you, and could mention other points wherein the prize winning drawing does not conform to the conditions, but it would take up too much space and would not be necessary unless the matter came to a conference between the competitors and the authorities in charge of the matter.

Personally, I endeavored to conform to all the conditions of the program, especially in reference to a building of the class and character and cubical contents that could be erected for the money, and also in conforming my exits and entrances and the treatment of my elevations to the actual grade levels, and any one who did not take care of even these points, in my opinion should have been eliminated from consideration. Also, the points you make in regard to the sight lines are well taken, especially as I am experienced in matters of this kind, having built several modern theaters, and the placing of the organ, which was supposed to be an important feature, is absolutely trivial in the winning scheme, and the plans are so arranged that it would be difficult to place it anywhere else.

Summing up the situation in regard to the winning designs, as you have stated, the report of the experts informs us that the design is especially flexible, and I am sure it has every need to be, as I fully agree with you, in that the only way this building can be erected would be by an entire revision of the whole scheme to bring it anywhere within the amount of money, or to fulfill the requirements of the program as they should be fulfilled.

I do not know what the condition of this matter is now, as your letter is dated almost two months ago, but I think that the situation in regard to competitions is difficult enough without adding to it an unjust decision, which this evidently is, and, if the other competitors, or a sufficient number of them, wish to carry this matter before an arbitration board, or into the courts, on the authorities refusing to take cognizance of this condition, I would be willing to subscribe my portion of the expense, if for nothing else than in the interest of a "square deal" and as an example to other committees when issuing a program of this kind, which constitutes a contract, that they must adhere to the letter of same.

As you will note, I am sending a copy of this letter to the mayor of Portland, and trust that you will advise me of any further developments, and also that you will call upon me if I can be of any further assistance to you in the matter.

I would add further that such a decision practically abrogates the professional ethics on the subject of competitions as issued by the American Institute of Architects, and, if we are ever to have any method in the conduct of such matters or any practical results for the labor and thought that has been put upon the subject, we must take a firm stand as a profession when matters of this kind are brought to our notice. Very truly yours,

A. TEN EYCK BROWN, Architect.

From Thomas Hawkes, Portland, Ore.

Editor The Architect and Engineer.

Dear Sir—I thank you for the copy of your magazine containing Mr. Cahill's criticism of the Portland Auditorium Competition.

Complying with your request that I should make comments on same, I would say that I endorse Mr. Cahill's findings and verify his statements. If you desire it, I can give you names and addresses of other architects here who state their willingness to testify to the facts Mr. Cahill has given.

It was a most unjust award. Had the city of Portland advertised that it would award prizes for horses, to be judged on their points, two of the conditions being that they should not exceed fourteen hands in height and 1200 pounds in weight, and over sixty owners had at their own expense prepared and shipped from all parts of the country animals conforming to these requirements, and one had sent a sixteen-hand horse weighing 1600 pounds, with an arched neck and flowing tail—but wind-galled and spavined—and then the judges, fascinated with its commanding appearance, had given it the prize, would not the other competitors have been defrauded, and would they not have fair grounds for action against such unfair judges?

It appears to me that the award of the Auditorium Competition was analagous to my example.

For the fair fame of Portland and for the sake of the profession, this scandal should be ventilated; the blame placed where it belongs; the verdict set aside, and a new and careful consideration given of the competing plans by an architect whom the competitors would mutually agree upon.

In default of this, each competing architect who complied with the mandatory clauses of the program should be paid a fair commission for the value of his work.

Unless some such course as this is adopted surely the death-blow has been given to future competitions on this Coast.

In face of the "facts demonstrated" it is interesting to read on your editorial page an announcement of the approval of the local chapter of the Institute of the conduct of this competition. But, then—Lorimer was "endorsed" by his constituents.

Yours very truly,

THOMAS HAWKES.

From Richards, McCarty & Bulford, Columbus, O.

The Architect and Engineer Company, San Francisco, Cal.

Gentlemen—We are in receipt of your Christmas number of The Architect and Engineer, containing "Criticism of the Portland Auditorium Competition." Enclosed find copies of some correspondence that may be of interest to you in this connection.

We were rather indignant when the published prize designs were received in this office, but did not write any criticism of the action of the Commission until we received Mr. Lawrence's letter raising the question of prepaying the express on returned drawings. We did not feel then, and we do not feel now, that it is worth while to enter into any extended argument or criticism regarding the awards, but we have examined the plans sufficiently to know that Messrs. Wright, Rushforth and Cahill are absolutely correct in the main points upon which they take issue with the decision of the Commission.

It is not intended as any criticism of the Architect submitting the first prize designs, as we know he is a man of ability and able to handle this project properly, when we say that there is no question but that the design submitted in this competition should not have received any consideration or mention under the conditions of the program. The solution of the problem he presented is an ideal one, and not at all in accordance with the program in the following particulars:

Cubic contents;

Cost of structure;

Total disregard of the conditions imposed by the site.

The Commission in arriving at its decision must have been entirely influenced by the beautiful rendering of the drawings, and have forgotten to take into consideration in any particular the argument it had made with each of the architects who so willingly submitted their plans and gave their time to this work.

We can hardly believe that so fair a program could have been put out by this Commission with the deliberate intention of gathering information unfairly or covering up a decision that had really been arrived at before the competition was instituted. We prefer to take the more charitable view, viz., that the Commission was not sufficiently informed as to the duty devolving upon it in this matter.

Yours very truly,

RICHARDS, McCARTY & BULFORD.
By C. E. Richards.

The enclosures referred to in the above letter follow:

Portland, Ore., December 5, 1911.

Richards, McCarty & Bulford, Columbus, Ohio.

Dear Sirs—Owing to a misunderstanding, some of the competitors have taken exceptions to the returning of their plans without prepaid express.

Not wishing to have any feeling of this kind to mar the success of the competition, I am asking that you submit to E. H. Morehouse & Co., Masonic building, this city, statement of express charges paid by you upon receipt of your drawings.

This amount will be refunded to you. Yours very truly,

ELLIS F. LAWRENCE,
Professional Adviser, Public Auditorium Commission.

December 14, 1911.

Mr. Ellis F. Lawrence, Portland, Ore.

Dear Sir—We are in receipt of yours of the 5th. In reply, have written Morehouse & Co., as requested, although we do not feel that the Auditorium Committee are under any obligations to repay expressage upon our drawings returned.

We have a copy of the Pacific Coast Architect for this month, publishing the prize designs. You, of course, will not be surprised when we express to you our utter amazement as we contemplate them.

We think the first prize design is a beauty, idealistic. The firm submitting it is first class, and will give you good service. We know of their ability, but their design submitted is a rank violation of two explicit conditions of the competition:

(1) Cubic contents;
(2) Cost.

We presume these items were not taken into consideration by the Board of Awards.

In regard to the other prize designs and the order in which they are arranged, we feel that it is entirely unnecessary for us to make any comment. They speak for themselves.

Thanking you for courtesies extended, and with personal regard, we are.

Yours very truly,
RICHARDS, McCARTY & BULFORD.

December 21, 1911.

Richards, McCarty & Bulford, Ruggery Building, Columbus, Ohio.

Gentlemen—I am in receipt of your letter of December 14th, in regard to the conduct of the recent Auditorium Competition in this city. While I appreciate the spirit in which you criticise the jury's award, I wish to assure you that the jury was conscientious in its judgment and, I believe, could you have seen the entire exhibition, you would have agreed fully with the award.

I have been fortunate enough to receive many congratulatory letters on the conduct of this competition, and I regret exceedingly that any competitor is dissatisfied. Yours very truly,

(Signed): ELLIS F. LAWRENCE.

From Richards, McCarty and Bulford, Columbus, Ohio.

January 9th, 1912.

Messrs. Wright, Rushforth & Cahill, Portland, Ore.

Gentlemen—We have read with interest your letter published in the Christmas Number of The Architect and Engineer, copy of which was sent us by the Editor, together with a letter asking our opinion which we have sent him today. We thank you for having gone into this matter and written as you have regarding it. You are absolutely correct in your position and we had written Mr. Lawrence briefly along the same lines something over a month ago. We notice, however, that Mr. Lawrence said nothing publicly about our letter.

Yours very truly,
RICHARDS, McCARTY & BULFORD,
C. E. Richards.

From Wilbur T. Mills, Columbus, Ohio.

The Architect and Engineer, San Francisco, Cal.

Gentlemen—Reply to your letter of December 30th has been delayed awaiting the arrival of the Christmas number of your magazine containing Mr. Cahill's article regarding the Portland competition.

I have seen only the reproductions of the prize designs in that competition, as published in your magazine and "The American Architect," the reproductions being so small that it is almost impossible to go into details. Any opinion I might hold would therefore be based on the correctness of Mr. Cahill's statements.

Assuming that these statements are all matters of fact, I most heartily commend his criticism of the competition awards, and cannot believe that fair-minded people of the city of Portland will be content to allow any such judgment to stand.

If there should be any movement on the part of other competitors to join in a protest, I shall be very glad to throw any small influence I may have on this side of the question.

Very truly yours,

WILBUR T. MILLS.

From Rankin, Kellogg & Crane, Philadelphia, Pa.

Editor The Architect and Engineer, San Francisco, Cal.

Dear Sir—We acknowledge receipt of your letter of December 30th, and the December Architect and Engineer, containing Mr. Cahill's criticism of the award in the Portland Auditorium competition.

We have read Mr. Cahill's article with great interest, and if the statements he makes in his letter to the mayor of Portland, under date of November 9, 1911, are accurate, grave injustice has been done. It is becoming increasingly evident that serious attention will have to be given to the matter of competition judgment. Of course, where personal preference and taste enters so largely there will always be differences of opinion, but no design, however excellent it may be considered by the jury, should be placed first if it violates any of the mandatory provisions of the program. It is a serious matter for an award of first place to be made to a design exceeding the cubic foot limit by 25 or 30 per cent, and the execution of which would exceed the cost limit 50 to 100 per cent, as is definitely charged by Mr. Cahill. It seems to us that the general subject is one that deserves the prompt and effective attention of the profession.

Very truly yours,

RANKIN, KELLOGG & CRANE.

From John Graham, Seattle, Wash.

The Architect and Engineer, San Francisco, Cal.

Gentlemen—I have received yours of the 30th ultimo, also copy of the December Architect and Engineer, for which I thank you.

I was naturally very much interested in Mr. Cahill's criticism of the architects' competition for the Portland Auditorium, but for myself, would say that I think it one of the best conducted competitions that I have entered.

Yours very truly,

JOHN GRAHAM.

Seattle, Wash., January 11, 1912.

From Righetti & Headman, San Francisco.

Mr. J. B. S. Cahill, 571 California St., City.

Dear Mr. Cahill—I read your article entitled, "Criticism" of the architectural competition for the Portland Auditorium, with great interest and with a feeling of satisfaction and approval.

I know your article expressed the minds of a multitude of our professional brethren, and you are to be praised for your interest in affairs of this kind.

With my best wishes to you for a successful and prosperous New Year, I am,

Yours respectfully,

AUGUST G. HEADMAN.

From James E. Ware & Sons, 1170 Broadway, New York City.

Mr. Bernard J. S. Cahill, Architect, Portland, Ore.

Dear Sir: I have just read with a great deal of interest your letter to Mayor Rushlight, of Portland, Ore., published in the Architect and Engineer, criticising the award in the recent Portland, Ore., competition.

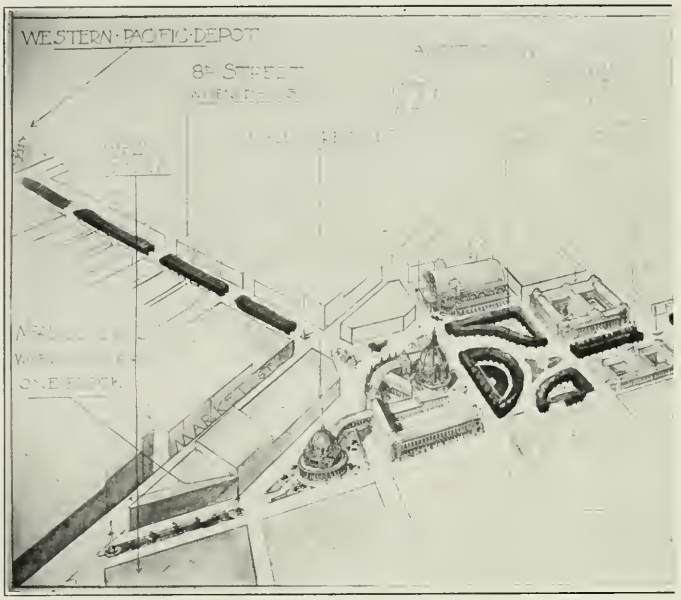
This office tried seriously to answer the conditions of the program, and to design a building which would conform with the peculiar grades of the property. I am in entire sympathy with your criticism, and trust that what you say will carry a great deal of weight with the authorities in charge. We would suggest, if you have not already done so, that you send a copy of your criticism to the American Institute of Architects for their consideration.

Appreciating your leadership in this matter, I remain,

Yours very truly,

ARTHUR WARE,

James E. Ware & Sons, Architects.



San Francisco Civic Center Plan, as Suggested by Architect B. J. S. Cahill, and

A Few Notes on the San Francisco Civic Center

Mayor Rolph has named Messrs. John Galen Howard, Frederick H. Meyer and Jno. Reid, Jr., as members of the San Francisco Civic Center Commission and Board of Advisors of a competition that will be held later for plans for the new municipal building. The Commisson is a splendid one and fully competent to grapple with the strenuous and exacting work mapped out for it. The following article by Architect Loring P. Rixford, former city architect, contains some practical suggestions on the Civic Center question, not heretofore advanced, and doubtless, will be given careful consideration by the Board.

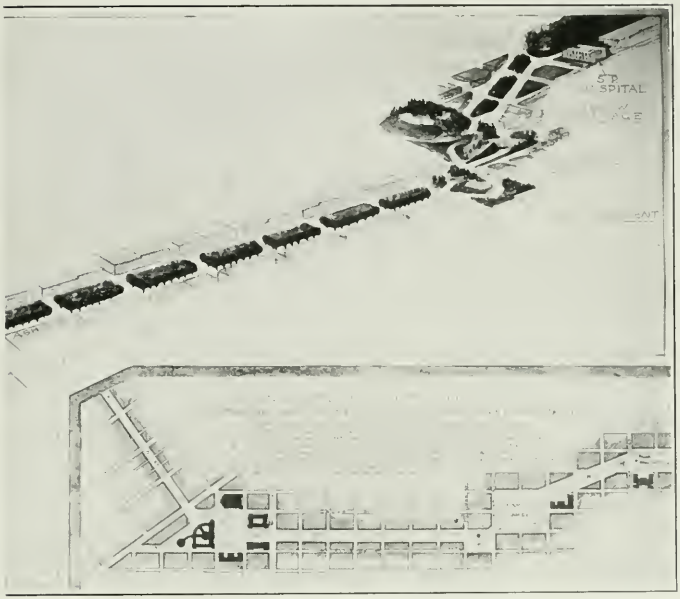
In this discussion the reader is referred to the accompanying plan by Mr. Cahill—design by the writer.—Editor.

By LORING P. RIXFORD, Architect

IT IS generally conceded that if the Panhandle is extended, its most logical termination is at the intersection of Van Ness avenue and Market street.

The suggestion of connecting the Panhandle with Fulton street, through Alamo Square, and widening Fulton street to the City Hall lot was a result of an attempt to get a proper approach to the west facade of the old City Hall, and is not a result of a well-defined principle of city planning.

The suggestion of condemning six blocks of land to the west of the City Hall lot, two of which are to be left as an open space, and four of which are to be covered with monumental buildings, would result in making a barrier to



which will be Followed to Considerable Extent by the Civic Center Commission

the development of business along an area which is the natural drain of that level portion of the city known as Hayes Valley.

In ten or fifteen years from now the intersection of Larkin and Market streets will probably be as busy as the intersection of Powell and Market streets is today.

Imagine an area of eight blocks similarly used in the neighborhood of Union Square, and imagine the barrier this would produce in this neighborhood to the development of retail business.

The suggestion of dominating the eastern side of a rectangle (756 feet long) equal to two city blocks, with the facade of the City Hall, would demand a long facade (say 500 feet), and would result in a low rambling structure very much the same type as the old City Hall, which was very inconvenient on account of the great length of corridors.

Although the sides of the rectangular open space can be covered with monumental buildings, the corners of this rectangle are to be in private ownership, and are likely to be covered with the conventional store or saloon, which may hardly be considered as monumental in character nor adding to the beauty of the square.

In view of these defects in the suggested scheme, I beg to submit the accompanying plan as a rational and economical scheme which will appeal to the public who transact business with municipal offices.

Suggestions for a Civic Center
Loring P. Rixford, Architect

The City Hall site is opened up; Hyde and Leavenworth streets are cut through to Market street, allowing business to follow along these streets; Fulton street is brought into the square, and Larkin street given another outlet to Market street.

The resulting building sites are of proper size and shape for the buildings for which they are to be used, and are arranged around a rectangular open space or court, monumental in size, about equal in area to Union Square, and not so large as to dwarf the surrounding buildings, which if built to a uniform height of 100 feet (about the height of Hall of Justice), would be more than adequate to accommodate the various departments.

The buildings would be arranged as follows:

(a) Auditorium, 250 x 150 (same ground area as pavilion corner Sutter and Pierce streets), which, with galleries, would seat 10,000 people.

(b) Legal Department:

Sheriff	1,950	sq. ft.
County Clerk	13,989	"
City Attorney	3,313	"
Superior Courts	27,025	"
Justice Courts	9,600	"
Law Library	6,240	"
Juries	2,396	"
	64,513	sq. ft.

(c) Hall of Records. Large enough for next fifty years, to replace present structure, which is badly arranged and will soon be too small for its uses.

(d) Legislative and Executive Departments:

Mayor	3,790	sq. ft.
Auditor	6,100	"
Treasurer	4,520	"
Assessor	10,280	"
Tax Collector	12,000	"
Registrar	14,400	"
Supervisors	12,717	"
	63,807	sq. ft.

(e) Boards and Commissions:

Health	17,787	sq. ft.
Education	7,220	"
Fire	3,308	"
Civil Service	4,060	"
Play Ground	680	"
Board of Works	21,000	"
Public Utilities	10,000	"
	64,055	sq. ft.

(f) Can be sold as site for opera house or commercial uses, or can be laid out as parking.

* * *

Full Text of the Majority Report on San Francisco Civic Center.

Following is a copy of the majority report of the committee appointed to advise the buildings committee of the Board of Supervisors in regard to the location of the new San Francisco City Hall, with a view to the development of a civic center, together with the statement supplementary to the report which was presented to the Board of Supervisors and later indorsed by that body:

TO THE BUILDING COMMITTEE
OF THE BOARD OF SUPERVISORS:

Gentlemen:-

The majority of the Advisory Committee appointed to consider the location of the Civic Center, recommends that the City Hall be built on the old site and that the other buildings of the Civic Center be grouped around it, in accordance with a scheme to be developed by the properly constituted authorities.

This decision has been reached after the most searching and impartial analysis that time permitted of every idea which has been presented by architects or others. The recommendation is based on permanent considerations, 1st, of the most practical convenience of the city, 2nd, of the greatest aesthetic possibilities for the City Hall itself and for the monumental buildings to be grouped with it around the Civic Center; and 3rd, of economy in achieving the best results both practical and aesthetic.

Respectfully submitted,
(Signed) J. G. HOWARD, Chairman,
CLARENCE R. WARD,
HARRIS D. H. CONNICK,
W. B. FAVILLE.

STATEMENT SUPPLEMENTARY TO THE MAJORITY REPORT
OF THE ADVISORY COMMITTEE

In considering the comparative advantages of the various sites suggested, it was the unanimous opinion of the Committee that, on the whole, none fulfilled the requirements of present and future convenience and beauty so well as either the old site or the site at the junction of Van Ness avenue and Market street. The final discussion was therefore upon the comparative merits of these two sites.

The City being already in possession of a valuable, convenient and beautiful site for the City Hall, the arguments which would lead to its removal must necessarily be weighty and clearly demonstrable. The burden of proof devolves upon the advocates of other sites.

Among the many advantages of the old site are the following:

1. It is more conveniently situated with relation to the present center of activity. Even assuming that the junction of Van Ness and Market is destined to be the future center of traffic distribution (which is to say the least problematic), the old site of the City Hall is not sufficiently far removed or inaccessible from that point to be inconvenient; and until, if ever, Van Ness and Market becomes the center, the old site is more convenient.

2. The old site has special advantages in point of spaciousness which could not be duplicated at Van Ness and Market except by much more thorough remodeling of the City plan in that vicinity than has been contemplated even by the most ardent advocates of that site.

3. The old site offers exceptional opportunities for vistas to the City Hall along existing streets (such as Eighth and Fulton streets) which the site at Van Ness and Market does not have and could not get except by widening or deflecting existing streets or cutting new streets.

4 The old site lends itself to the development of longer and therefore more impressively monumental elevations than the site at Van Ness and Market as proposed. With the longer elevations possible in the planning of the building are obtainable. The site at Van Ness and Market, as proposed, is very irregular and cut up, and does not lend itself near so readily to convenient and monumental planning.

5. The placing of the City Hall on the old site involves no necessary closing or regrading of any existing streets, even for a much more ample Civic Center than that suggested for Van Ness and Market. No property owner therefore would be in a position to claim damages and thereby delay the progress of the work if the old site is chosen; while the opposite is the case with Van Ness and Market.

6. It is undesirable that the group of monumental buildings forming the Civic Center should cross Market Street, as it seems certain that the character of Market street would be essentially changed thereby and its natural traffic interrupted. No scheme which is satisfactory from an artistic point of view has been suggested at Van Ness and Market which does not traverse Market street. At the old site it is possible to open up a square to the west around which the buildings could be grouped more freely and impressively than at Van Ness and Market, and with the very great advantage of not interrupting the Market street traffic, at any rate on the south. A great advantage of such a square would be to give an additional monumental approach to the City Hall from Van Ness avenue toward which one of the most important fronts of the building would face.

7. While there are some arguments in favor of extending the Park Panhandle in a straight line to the junction of Van Ness and Market, this is not, topographically, the most natural approach as it would cross an intervening hill, and necessitate extensive excavation and fill, and cause general disturbance of property on both sides for a considerable distance. A more natural extension of the Panhandle so far as grades are concerned, would be diagonally to Alamo Square and thence east on the line of Fulton street, widened to include the narrow streets north and south, thus opening up a magnificent vista of the principal architectural feature of the City Hall, unrivaled in its possibilities.

8. Even assuming that the intersection of Van Ness and Market is destined to be the future center of traffic distribution, it would seem undesirable to place the great group of monumental buildings forming the Civic Center, at precisely that point. Great advantages of dignity and approach, as well as considerations of the undesirability of congesting already centralized traffic with the added crowds from the City Hall Auditorium, Opera House, etc., all unite to make it apparent that these great buildings should be slightly removed from the actual traffic center. The distance from that assumed center to the old site is sufficient and not too great.

9. If, instead of traversing Market street as is proposed in the plans at Van Ness and Market, the buildings subsidiary to the City Hall be grouped to the west of the old site, the cost of acquiring the necessary land would be certainly not more and probably much less than the cost of the operations which would be necessary for the Van Ness and Market developments.

10. We are not to be understood as reporting against the vicinity of Van Ness and Market as likely to become an area of active traffic; but the Civic Center of such a city as San Francisco will be, when it has so grown as to make Van Ness

and Market its center of traffic, should be a vastly greater thing than merely a group of public buildings immediately around a single paved square.

We conceive of the Civic Center of San Francisco as a great metropolitan grouping, upon largest lines, of not only the City Hall and the buildings immediately subsidiary to it, and now contemplated, but also of Museums, Theaters, Opera Houses, Libraries, Clubs and other semi-public buildings, Churches, Galleries, Hotels, High Class Office and Business Buildings, Union Railway Station or Stations, State and Government Buildings, etc., etc., united and embellished by Parks, Squares, Avenues and Boulevards in a harmonious and magnificent whole. Instead of being concentrated in one place, such a center might better be developed upon a series of boulevards circling on both sides of Market street, (without, however, interfering with its traffic) from the Post Office on the east to Valencia street on the west, and from Fulton street or a new and glorified Panhandle on the north to Howard street on the south. The one essential condition of such a scheme is adequate opportunity for expansion without destroying the unity of the whole. The Van Ness and Market site may become an element of the Civic Center, but it is too restricted and lacks elasticity and freedom for extension. The old City Hall site is admirably adapted to the beginning of such a Civic Center as has been foreshadowed above. What is wanted is not a type of village concentration around a single bustling market place, but a superb city organism flowing with larger life, and planned for fullest growth.

JOHN GALEN HOWARD, Chairman,
for the Committee.

* * *

Remarkable Organ in a Hotel

THE Hotel Astor in New York has in its ballroom an organ, costing $50,000, which is described by "X. de V." in a recent issue of Musical America.

The Astor organ is a remarkable affair. There are really two separate organs, located in different parts of the building, and so arranged that both can be played separately or simultaneously by one performer from any one of three consoles. The organs can also be played by two performers absolutely independent of each other. One of the consoles is in the orangerie room, one on the highest balcony of the grand ballroom, while the third can be moved around and operated from any place desired. At the informal afternoon concerts in the grand ballroom it is frequently found standing in the middle of the main floor, where it and the organist are viewed with wonder by the uninitiated. The organ itself is entirely out of sight in the ceiling of the big hall, and as the contrasting tone colors float down from such ethereal heights, a wholesome atmosphere of contemplative appreciation is produced. One might compare the result with a hidden orchestra platform, with only the conductor visible to the audience.

Now that a number of the important musical events of the season are being given in this hall, the possibilities of the organ are becoming manifest. Organists have, heretofore, bemoaned the fact that there was no downtown hall equipped with an organ which would be adequate and available for organ recitals of a serious nature. Until now the churches have been the only hope of the concert organist, and there the charging of an admission was frequently impossible, so that a professional abomination arose in the shape of "free" organ recitals. After such a precedent it may be a difficult matter to educate the public to the idea of paying for organ recitals. It is quite possible, however, that some such serious use of the instrument in the Hotel Astor may be arranged in the near future, through the co-operation of the hotel management with the National Association of Organists along lines already under consideration.

The Letting of Public Contracts and the Rights of Lowest Bidder

Major C. E. Gillette, of Philadelphia, recently read before the American Society of Engineering Contractors a paper on "The Principles Governing Public Contracts," in which he outlined proposed changes in legislation governing the letting of contracts for public work. One of the suggestions made by Major Gillette is in favor of awarding contracts to the lowest bidder; "otherwise," the clause runs, "the lowest bidder shall have a legal claim for damages equal to the profits had the contract been executed."

This matter has been a familiar bone of contention among the engineering and contracting interests of the Pacific Coast. It is true that there are many things against establishing a hard and fast rule in favor of the lowest bid, but we are inclined to think that these are outweighed by the abuses which arise from giving municipal and public bodies too much headroom.

THE suggestions by Major Gillette will no doubt be found especially useful as a guide to engineers in the drafting of specifications and contracts.

(1) All expenditures of public money for supplies and construction work in amounts of $100 or more shall be by formal written contracts. Purchases of less than $100 may be by written proposal and written agreement duly filed.

(2) No bid shall be asked until an actual appropriation of funds has been made for the work or supplies, and before bids are asked for public contracts, official itemized estimates of the cost of the proposed work shall be made and permanently filed in the office of the public official who invites the bids.

(3) All public contracts involving an estimated cost of $5000 or more shall be advertised in three local papers having the largest sworn circulation, and in at least one trade journal of suitable type, sufficiently far in advance of the opening of bids to give the most distant bidder in the State a reasonable opportunity to see the notice in time to submit a bid after due investigation.

Contracts for less than $5000 shall be so advertised that every bidder residing in the municipality (or county) in which the supplies are to be delivered or work done shall have a reasonable chance to see the advertisement or receive the notice in time to submit a proper bid, and every official charged with the duty of purchasing supplies or making contracts must keep in his office lists of all dealers or bidders who request their names to be put upon such lists whenever such work and materials as they specify shall be desired by the official, and notice sent them in ample time to submit bids.

Purchases and contracts involving less than $100 may in emergencies be made by telephone, provided at least three bids be obtained, and the bids and prices be scheduled for public inspection, all the bids and the acceptances to be confirmed in writing.

In case of contracts for yearly supplies to be delivered as needed, purchases shall be by single items. The lowest bidder for each item shall be given the contract for that item, provided that if any bidder does not thereby secure items for which the estimate for the year in question or the actual use for the preceding year shall amount to at least $100, such items may be awarded to the bidder who bid the next lowest for each item.

(4) Specifications for public contracts shall in all cases comply with the following requirements:

(a) They shall be clear, definite and complete, expressed with words used in their dictionary meaning and showing exactly what is required in the literal use of the words, which literal meaning must be used in carrying out the contract. If in any case questions arise in the execution of the contract that cannot be clearly answered by the specifications, the matter shall be adjusted by arbitration in which the contractor shall select one arbiter, the official the second, and they two shall choose a third. Provided, the contractor or any citizen or corporation doing business in the State shall have the right to take the matter into the proper court.

The advertisement, instructions to bidders, specifications and contract form must together cover all necessary information to bidders. They must be concise. Unnecessary verbiage and repetitions must be omitted. Everything must be said once, clearly, and once only.

(b) They shall be itemized in full detail, the unit of every kind of material entering into the structure appearing in the schedule of prices bid.

(c) No responsibility for contingencies shall be specifically put upon the contractor.

(d) The specifications shall be so worded and all arrangements and management concerning the bidding shall be such that all bidders shall be bidding upon fair terms for exactly the same structure or the same result, and upon terms of exact quality as to advantages or disadvantages in so far as the official calling for bids can control or embody in the bid or award.

(e) The terms "discretion of the engineer," "judgment of the engineer" or their equivalents shall not appear in any specification or contract as calling for their exercise after the opening of bids, unless they be accomplished by full explanation in the specifications showing exactly how they will be exercised in the case of any of the various contingencies with reference to which they are used shall occur.

(f) No requirement shall appear in the specifications that have a tendency to discourage bidding unless such requirement is manifestly essential to the work or to the public interest.

(g) There shall be no requirement in the specifications or in the management of the bidding that shall require any citizen to disclose the fact that he contemplates bidding or is interested in a coming bidding.

(h) Specifications must be so arranged that in comparing bids only thing is to be taken into consideration, the total cost of the work.

(i) The specifications and drawings must all be ready for distribution and freely distributed as soon as the advertisement appears. No charge in excess of actual cost shall be demanded for any specifications or drawings accompanying them. They must be sold or furnished free to any one who asks for them without requiring any information from the party asking for them, and they must be returnable at cost after the opening.

(j) No specification shall require the contractor to follow the specifications and at the same time be responsible for accomplishing certain results, or to guarantee the endurance of the work, or to be responsible for the repairs for any time after the completion of the work according to the specifications.

(k) Specifications or instructions to bidders must suggest that every bid should be enclosed in two envelopes, the inner sealed with wax and the outer not showing that a bid is enclosed.

(l) The official estimate shall be printed in the specifications with the information that no award shall be made for an amount greater than the total of the estimates and no supplemental contract increasing the work beyond that limit will be legal. Also that no bid will be accepted in which the price bid on any article is more than ten per cent. greater than the estimate, and that if in the execution of the contract it be necessary to increase the amount of any item more than ten per cent. beyond the estimate, the price of such increase shall be determined by arbitration subject to court action, as specified in Sub. Par. (a) above.

(5) Every citizen and every corporation doing business in the State shall have the full right to bid on any public contract and have the bid accepted if it is the lowest.

(6) Bids shall be opened in public. All bids received must be kept and opened. Bids with erasures or changes in figures that affect the cost of the work must be thrown out. The public shall have the right to inspect the bids at the opening.

(7) Whenever bids are advertised for, they must be opened at the time mentioned, and an award must be made to the lowest bidder. Otherwise, the lowest bidder shall have a legal claim for damages equal to the profits had the contract been executed.

(8) Any citizen of the State and any corporation doing business in the State shall have the right of injunction in the proper court to require compliance with this law, and such citizen or corporation shall have the further right to appear as a party in interest in any suit or adjudication between the contractor and the city official whenever the matter of public contract comes before the court.

(9) In the execution of all contracts, inspectors duly appointed according to law by the public official shall have full power to see that the specifications are duly carried out and the completion of the work or the delivery of the goods shall be followed by the proper certificate of the inspector that the work and materials have been in accordance with the specifications. This shall relieve the contractor of all further responsibility.

Competition for the Le Brun Traveling Scholarship

THE New York Chapter, A. I. A., is about to hold a competition to determine the award of the Le Brun Traveling Scholarship. Under the terms of the Le Brun deed of gift, the following provisions are established:

The award is to be made to some deserving and meritorious architect or architectural draughtsman, resident anywhere in the United States, to aid him in paying the expenses of an European trip lasting not less than six months. The amount which will be paid to the beneficiary is $1000.

The beneficiary is to be selected by means of a competition; the award being made by a jury consisting of at least three practicing architects, no one of whom is to be connected with any school or atelier for the teaching of architecture. In making the award, the jury is to give full and careful consideration to the records of qualification filed by the competitors, as well as to the comparative excellence of the drawings submitted.

Any architect or architectural draughtsman, a citizen and resident of the United States, not under twenty-three or over thirty years of age who shall, for at least three years, have been either engaged in active practice, or employed as an architectural draughtsman, and who is not and has not been the beneficiary of any other traveling scholarship, shall be eligible to compete.

Each competitor must be nominated by a member of the New York Chapter of the American Institute of Architects, who shall certify in writing that the above conditions are fulfilled, and that in his opinion the competitor is deserving of the scholarship.

No member of the Chapter shall nominate more than one candidate.

Every competitor must engage to remain, if successful, at least six months abroad, and to devote well and truly that length of time to travel and the study of architecture otherwise than by entering any school or atelier or attending lectures, it being intended that the benefit derived from this traveling scholarship shall supplement school or office experience.

It is proposed to begin the competition about March 20th, and to allow until May 1st for the receipt of drawings. Further details as to dates will be issued later, but it is now expected that the winner shall start upon his trip July 1, 1912.

All persons who are eligible, and who desire to compete for this scholarship, are requested to send their applications to Mr. Henry Bacon, 160 Fifth avenue, New York City. Applications must be received not later than March 1, 1912, and must in each case state clearly the residence, citizenship, age, experience and general qualifications of the applicant, and be accompanied by the necessary nomination and certificate from a member of the New York Chapter, A. I. A. Persons residing at a distance from New York and not knowing a member of the New York Chapter, may avail themselves of the services of any well known architect who can vouch for them to a member of the New York Chapter with whom he is acquainted.

No application will be considered that is not accompanied by a nomination and certificate from a member of the New York Chapter, A. I. A.

HENRY BACON,
ARNOLD W. BRUNNER,
WILLIAM M. KENDALL,
C. GRANT LA FARGE,
H. VAN BUREN MAGONIGLE,
Committee on Le Brun Traveling Scholarship.

Design for Church, Pomona, California *Robert H. Orr, Architect*

Method of Tinting Concrete

Considerable interest is being shown in the tinting of concrete when it is used for residence purposes. Undoubtedly the work can be done successfully with certain colors. Concrete can be tinted green, for instance, by the use of cromium oxide, in proportions of approximately 5 to 8 per cent of the weight of the cement used. A yellow or buff tint can be obtained by the use of French ocher in the percentage of 4 to 10, according to the shade desired. Red is obtained by the use of red oxide of iron, that manufactured in Germany or France preferred. A pure white concrete, says Contract Record, can be made by the use of one part white Portland cement and two parts marble screenings, tough, hard marble preferred, the screenings to pass through a No. 8 screen and be collected on a No. 40 screen. It should be mixed fairly wet so that it will run into the molds. The molds should be slightly rocked and jarred, so as to expel the air bubbles. For some characters of work the concrete can be made not quite so wet, but of about the consistency used by brickmasons in laying brick, and pressed in the molds. As soon as the concrete is hard, say in three or four days, it should be rubbed well with a fine terrazzo polishing stone. This will give the appearance of a white polished surface.

* * *

What Impressed Him Most

"So you got the opinions of two lawyers on the case. Were their opinions the same?"

"Yes, $25 each."

Progress and Development of Architecture Since the Chicago World's Fair

By ALFRED H. WHEELER, Architect.

PROGRESSION is the watchword now in the industrial arts and sciences, and is influencing the field of politics and commercial industry. It is a force that will, if judiciously controlled and guided by intelligent thought, irresistibly compel advancement, and attract like a gigantic magnet. As regards the world of applied art and architecture, and the wonderful advance it has made in America, the question is often asked, "What started it?" The answer would undoubtedly be, "The Chicago World's Fair." Here is where the first seed of progression was planted. Subsequent fairs and expositions have been of immense benefit to the country in advertising its enormous wealth and industrial resources, and future possibilities and development, each one showing great advancement in the arts and sciences. But, they did not plant the first seed which ultimately gave birth to the great revival of art and architecture in America.

Those who were privileged to see this great industrial exhibit were impressed for the first time with the architectural beauty conveyed in many of the buildings. It was a revelation to thousands of beholders which, before this, were only seen by a few art lovers and students abroad.

It is not the purpose of this brief article to touch on the many beautiful and scientific wonders seen inside those buildings, but principally to emphasize the fact of the great impetus given to architecture and the kindred arts in America, and the birth of a better style in all classes of buildings. At this time there were no special schools for the study of architecture, or at least very few, so the young architect journeyed to Paris, and other art centers, for study and research; and those who went with a definite and determined purpose came back with honors and diplomas, filled with a great ambition to "do things."

As this is a country of great opportunities, this coterie of men soon found their bearings and made themselves a power, thus starting a new era of architecture which has kept steadily improving and advancing until today the arts in America are recognized, and the influence felt all over the world. One has only to take up the leading art journals and architectural magazines for the proof of this statement, in which are shown the works of thoughtful, well trained and masterful minds. The various problems were successfully met, whether in the design of a Government building, State capitol, library, bank, a great university, hospital, railway terminal, etc., each showing skill of a high order in plan, design, composition, adaptability to site and environment, and the practical use of material entering into the construction. We must not forget that the leading manufacturers of the country have contributed largely to the successful architectural development by meeting the demands and conditions in an artistic and scientific manner, the creative ideas of the master mind. These same men, through the medium of representative magazines, have fostered the ambition in the younger students by offering prizes in competition for the solution of problems in design, composition, planning, etc., and the results have been very beneficial and fruitful, and it is hoped will be continued. Along the same line, architects of repute for a number of years have formed ateliers for their office staff, thus assisting with their knowledge, advice and exchange of ideas, the study of architecture on the lines laid down by the "Ecole Beau Arts of Paris." The cultured and wealthy

patrons of art have assisted in this movement of progression and development by their unlimited funds and personal pride, in carrying out on a magnificent scale, the creations of men of genius.

The facilities and opportunities for the study of architecture, which were limited some years ago, are quite numerous now. Leading universities of the Eastern, Southern and Western States have introduced the regular four years course. There are also several other special technical schools distributed throughout the country, whose influence is being felt.

A comparatively new field of building construction has opened up the last few years. I refer to reinforced concrete. Some notable achievements have been accomplished with this material, not only structurally, but ornamentally, and it is being used extensively, all over the country, and so far proving successful, but whether this new idea will take the place of the much-used and tried steel skeleton type, is a problem for the future. Cost and public safety will eventually decide the issue.

During the last decade, or more, much thought and study have been taken up with the planning and grouping of buildings for hospitals, universities and colleges, with a view to site and future development. A particular style of architecture has been determined upon by the board of regents and their professional advisers as to what will best typify the dignity and purpose of said buildings.

Civic planning is another field of art which the larger cities are considering. Already comprehensive plans have been made and submitted by eminent architects and engineers who have devoted considerable time and study to planning of the older cities of Europe, and have gotten helpful ideas and suggestions. The fulfillment of these ideas will take many millions of dollars, and a vast amount of American energy, but like the Panama Canal problem, it can and will be carried out. "Rome was not built in a day." Much might be written on what has been achieved in the past few years, and is typical of Western energy, but space will not permit.

Finally, as a result of this co-operation and concentration of progressive thought, the public and communities are benefited by improved conditions and environment, and are also educated to a higher standard morally, physically and intellectually. As in the realms of good music, so in the fine arts, each is sending forth a refining and elevating influence, not only on the present generation, but on the future ones.

* * *

Historical Table for Institute's Official Home

A feature of the recent convention of the American Institute of Architects was the presentation to the Institute by San Francisco Chapter, of the table upon which President Madison signed the treaty of Ghent. This table was in the Octagon, the present headquarters of the Institute in Washington, at the time President Madison had his residence there, following the burning of the White House by the British. The historic piece of furniture was sent to San Francisco in 1889. It was secured by the San Francisco Chapter, and through the good offices of this organization, now finds a final resting place in the Institute's official home.

* * *

Hazing

The new apprentice in a Seattle architectural office who was sent to a colleague's studio for some "finishing points," came back with an old broom carefully tied up in paper.

Cargo of Japanese Oak Logs Discharged at the San Francisco Wharf

A Plea For Plain Oak

By C. H. WHITE.*

IT IS needless to dilate upon the advantages of hardwood trim as compared with redwood or pine. The durability of hardwood makes its higher first cost of no importance in the comparison. Of the various hardwoods of medium cost used for interior trim on this Coast, the principal ones are birch and southern red gum. The best wood for this purpose, and one which is very plentiful and cheap in this market, has been entirely overlooked. We refer to plain oak.

Throughout the Eastern States plain oak is very much favored for the trim of office buildings, hotels, apartment houses, etc., as well as private residences. Its low price compared to quartered oak and mahogany (it being on about the same level as birch or gum) causes it to be very much in demand. On this Coast, however, until within the last year or so, the difference in cost between plain oak and quarter-sawed oak was not great enough to cause the use of plain oak trim to be general. Coming from the Middle West, both woods had to pay the same amount of freight per thousand, and this freight added to the original cost, made the percentage of difference between the woods comparatively slight. This, however, is now changed. The Japanese oak logs, which for the last few years have been coming into this market in immense quantities, have brought the cost of plain sawed oak down, and the supply of dry lumber available for building purposes is very large, so that plain oak should be a very desirable wood for interior trim at the present time. Its use will also further the cause of home industry, as practically all the plain oak used in this market is manufactured from imported logs at the sawmills in San Francisco, Petaluma and Los Angeles.

Plain oak is the best known of the hardwoods. As for beauty, it far surpasses birch, which is always stained or mahoganized, while plain oak can be finished natural, weathered, Flemish, or in any of the many styles in which the modern cabinet makers finish work. As between oak and

*Manager White Bros., hardwood lumber dealers, San Francisco.

southern red gum, there is no comparison in natural beauty or durability. Oak is the king of woods.

With the abundant supply of plain oak now in the market at a cheap price, this wood should be a favorite for interior trim. The quarter-sawing of oak is a development of the last fifty years. Plain oak was used for a thousand years before that, being the principal material utilized in the construction of the old castles and cathedrals of England and the continent. When finished properly its beauty and richness increase with age. In short, plain-sawed oak fills all the requirements of an ideal hardwood trim. It has durability, cheapness and beauty.

* * *

Interior Decoration—Beauty of the Colonial Hallway

By ELEANOR M. WALKER in American Suburbs.

AT NO time has the building of Colonial houses been as popular as it is today. It makes little difference if it be the quaint, white rough-cast type, or the more stately brick house, but the influence of the Colonial is felt on all sides. The interiors, therefore, call longingly for the true furnishings of the time of our ancestors, and nothing better can be desired, for this sort of decoration soon becomes a work of love, and the study of it is engrossing and satisfying.

While much has been said and written in reference to the selection of correct furnishings for the various rooms in a home of this character, the hall, which really creates the first and important impression of the whole house, has been sadly neglected. It is a well known fact that it is the hall that acts as a key of color for the entire house, for all main rooms open from here, and consequently a sympathetic harmony must exist; otherwise the vista of an entire floor might be spoiled.

To keep the walls neutral in coloring is the first suggestion, for then the rooms may be as gay as the rainbow, and yet not conflict with the hall. But even this attempt often fails. We all demand a certain amount of color in our surroundings, and therefore, unless material of brilliant coloring is used at the doorways, or on the furniture, our first rule of having the walls neutral becomes a failure.

In some of the old homes found throughout New England, we find original Colonial wall coverings. The favorite tones used at that time seem to have been grays and yellows. Yellow, of course, sheds a sort of artificial sunlight upon the scene, as well as bringing out all the wonderful tones of the mahogany, but where gray has been used, we readily feel the want of gay materials, and our entrance is chilled by the coldness of the walls.

We often find a long, narrow hallway running directly through the first floor of the house, with a straight, high stairway, having white spindles, and a mahogany hand-rail opening from it, and seeming to continue the same feeling of primness to the next floor. This is a most difficult type to furnish, for it is apt to give an impression of cold stateliness, which the present generation is apparently trying so hard to overcome.

A sofa of Empire or of Sheraton design, when it is appropriately covered, tends to break the long stretch of wall space, and like all upholstered furniture, it immediately softens the hard lines of its surroundings. Haircloth is a favorite covering for this purpose, for it is practical, and yet thoroughly in keeping with the Colonial period of furnishing. The haircloth sold today does not resemble the slippery black stuff which gave every room in which it was used an appearance of mourning. This new material, fortunately, is made up in small conventional patterns, and outrivals many of the popular small designed tapestries.

Is the Chas. C. Moore Company Favored by City Engineer?

IN sending the accompanying letters to the Mayor and Board of Supervisors of San Francisco, The Architect and Engineer acted only for the city's best interests, and in the spirit of "fair play," for it is the opinion of those in a position to judge, that the mechanical equipment for the pumping stations of the city's salt water system now being constructed, could be more reasonably and more efficiently installed if the specifications and contracts were segregated. While this would entail more work on the part of the City Engineer, the result would be a benefit to the taxpayer and would in a measure, at least, eliminate the much talked of deficit in this department. The apparent unfairness in refusing to allow the Union Iron Works and the Keystone Boiler Works to submit bids on this work, only adds additional expense upon the city, since it prevents legitimate competition. Believing that these matters should be brought to the attention of the Mayor and Board of Supervisors, the following letters have been placed before them:

January 24, 1912.

The Hon. Jas. Rolph, Jr., Mayor of San Francisco, City.

Dear Sir—Realizing the efforts being made by you, and your administration, to promote both economy and efficiency in municipal undertakings, we beg to call your attention to the specifications for mechanical equipment for Pumping Plant No. 2 in connection with the salt water system, and also to the reported unsatisfactory conditions existing in the office of the City Engineer, both, which if true, tend to stifle legitimate competition and prevent the city from securing the best efficiency at the least cost. We refer particularly to that part of the specifications which refer to boiler equipment.

We enclose herewith a report by R. F. Chevalier (an engineer of high repute in this city) on the above-mentioned specifications, which tends to show them to be not only misleading and inexplicit (as referring to the boiler tubes. See mention in report; also copies of letters), but do not tend to allow the city to secure this work in the most efficient or reasonable manner; for while these specifications call for bids on the complete job, it seems to be the opinion of many experts in this line that this work could be more reasonably and more efficiently done if the specifications were segregated, allowing the manufacturers of the different items called for to submit their bids to the city, rather than to the general contractor, who demands his commission, and so forces the sub-contractor or manufacturer to charge a higher price, which in turn is charged against the city in the bid of the general contractor.

And it may be mentioned that there are very few who are able or willing to accept a general contract for this work (which again tends to eliminate competition), as was clearly proven by the fact that only two bids from local firms were submitted to the city for the construction of Pumping Plant No. 1, now under construction; and from inquiries made we are prone to believe that there will hardly be more than this number for Plant No. 2.

Several of the best known firms in this city have advised us that they will not submit bids on Plant No. 2, and this in two cases, at least, is owing to the specification being as a whole, and owing to the treatment said to have been received at the hands of Assistant City Engineer Ransom, before the bids for Plant No. 1 were submitted, at which time it is stated Mr. Ransom mentioned it would be useless for these firms to bid, as their boilers would not be accepted. (We enclose letters referring to this matter.) In view of the fact that both boilers referred to are of standard make, and have been installed and operated successfully on this Coast, it would, and does appear that Mr. Ransom was biased in his opinion, and gives color to the general opinion among the boiler manufacturers that a "process of elimination" was taken in order to "slate" the work for a particular boiler.

In view of these conditions, which have aroused a great amount of dissatisfaction among the local boiler agents, and is apparently preventing their submitting bids, and the fact that a general contract entails the purchase of the products of so many different manufacturers, we do not believe the city will receive the best competition on these bids, and consequently not the best price or efficiency; and so we respectfully suggest a postponement of the opening of the bids for this work until this

matter can be investigated and steps taken to secure general competition, by reason of which the city will benefit by it.

Still further in connection with this matter we respectfully offer the suggestion that in view of the fact that a power plant for the Geary Street Railroad is soon to be constructed, that the same be built in connection with Pumping Plant No. 2 of the salt water system. This we understand to be perfectly feasible, as both will be located near salt water, and in the matter of construction it would be considerably cheaper, and doubly so in operation, while the engineering features of a combined plant would be superior and more adaptable than in separate plants. The enclosed report of Mr. Chevalier deals on this subject.

Most respectfully yours,

THE ARCHITECT AND ENGINEER.

San Francisco, January 15, 1912.

Report on Specifications for Mechanical Equipment of Pumping Plant No. 2.

January 23, 1912.

Architect and Engineer, Monadnock Bldg., San Francisco, Cal.

Gentlemen—In answer to your request for a report on the specifications compiled by the engineering department of the Board of Public Works of San Francisco for the machinery equipment for Pumping Station No. 2, I submit the following brief report, owing to the shortness of time allowed.

Certain paragraphs of the specifications could be simplified by asking for material manufactured on a commercial basis, thus reducing the cost considerably. For example: In the boiler specifications the part referring to the boiler tubes is ambiguous, leaving it open to the discretion of the bidder whether to supply cold-drawn or hot-rolled tubes, the latter costing considerably less than the former, and has proven to be equally efficient. This leaves the matter of choice to the engineer after bids are opened, and will hardly be fair to the bidder.

In that part of the specification referring to the operation, economy and capacity of plant, the paragraph on the "time required for raising steam," namely, thirty-five minutes, would be an unnecessary hardship on the boiler. Especially, in view of the fact that conditions should never exist in the proper operation of the plant that would make this necessary. There are also a number of other points which could be taken up if time allowed.

It would be decidedly for the city's best interest were the bids for this equipment segregated. Specifications should be drawn up calling for independent bids on boilers, piping work, auxiliaries, electric apparatus, etc. By so doing, the manufacturers of these various equipments would be able to bid to the city direct, thereby eliminating the middle man's or general contractor's commission, and each manufacturer would be held responsible for his particular apparatus. It would furthermore be possible to select the most efficient units, where otherwise, when bid on as a whole, the reverse would be the case. Private corporations erecting power plants today find it more profitable and satisfactory to adopt this method.

Answering your inquiry regarding the advisability of combining the power plant of the Geary Street Railroad with Pumping Plant No. 2:

This plan is feasible, and would result in considerable saving; not so much in first cost of erection, but greatly in maintenance and operations.

Respectfully,

(Signed): R. F. CHEVALIER.

Letters from Union Iron and Keystone Works.

Mr. Marsden Manson, City Engineer, Hewes Bldg., 995 Market St., San Francisco.

Dear Sir—Referring to specifications for Pumping Station No. 2, A. W. S. S., please advise whether cold-drawn boiler tubes will be insisted upon for the boilers. That part of the specification does not seem to be quite explicit as to whether cold-drawn tubes must be used, or whether hot-drawn tubes will comply with the specifications.

Your early reply will be appreciated.

Yours very truly,

UNION IRON WORKS COMPANY,

(Signed): By R. H. Postlethwaite,

Manager Mining Department.

Office of Bureau of Engineering,
DEPARTMENT OF PUBLIC WORKS,
David Hewes Building,

San Francisco, January 16, 1912.

(In reply, please state for the attention of Mr. Ransom.)

Union Iron Works Company, Twentieth and Michigan Sts., City.

(For attention of Mr. Postlethwaite.)

Dear Sirs—Answering yours of the 15th instant in reference to the boiler tubes for Pumping Station No. 2, I will state that the specifications are not explicit as to whether cold or hot-drawn tubes shall be used, for the reason that it is immaterial to this office whether they are cold or hot-drawn. Any tube which answers the requirements of the specifications will be accepted. Yours very truly

(Signed): MARSDEN MANSON, City Engineer.

UNION IRON WORKS COMPANY,
Works and Main Offices, Twentieth and Michigan Sts.,

San Francisco, January 23, 1912.

The Architect and Engineer of California, Monadnock Bldg., City.

My Dear Sir—About one year ago, when the city of San Francisco was in the market for water tube boilers for its Pumping Station No. 1, the writer submitted drawings and data pertaining to the McNaull Boilers, and offered guarantees equal to that which would be given for any other first-class boilers, and the City Engineer's office refused to consider the boiler, and instructed me that it was useless to make a bid. I guaranteed that these boilers would be manufactured in San Francisco under their supervision. Yours very truly,

(Signed): J. J. TYNAN, General Manager.

KEYSTONE BOILER WORKS,
Southwest Corner Main and Folsom Sts.,

San Francisco, Cal., January 24, 1912.

Architect and Engineer, Monadnock Bldg., San Francisco, Cal.

(Attention of Mr. Greenhill.)

Gentlemen—In reply to yours of the 20th instant, will say that we do not intend to submit a bid on Plant No. 2 of the salt water fire protection system, for the reason that the specifications call for so much material that is entirely out of our line and foreign to our business, and for the further reason that the Assistant City Engineer, Mr. Ransom, has on a former occasion declared that the Parker boiler, which we handle, is not suitable for the purposes for which this plant is being constructed.

This statement was made by Mr. Ransom after we had sold twelve 645-horse-power Parker boilers to the Southern Pacific Company for their power station at Fruitvale, Cal., which boilers have since made the highest record for efficiency ever recorded, in an official test made by a committee consisting of Mr. R. F. Chevalier, Consulting Engineer; Mr. W. C. Miller, Engineer of Power Stations of Southern Pacific Company, and Professor W. F. Durand, Dean of the Department of Engineering of Leland Stanford, Jr., University.

The apparent unfairness of Mr. Ransom's attitude toward the Parker boiler renders it useless for us to participate in a competition for this contract.

We are, Very truly yours,

KEYSTONE BOILER WORKS,
By Jno. Robinson, Vice-President.

* * *

Architectural Publicity

The American Institute of Architects announces that it will advertise extensively in the future on the theory that publicity on all matters affecting the aesthetic taste of a community is valuable. The institute is preparing the way to use the newspapers as a medium through which to give the general public some idea of the varied activity of architects and to bring the people into a frame of mind which will find expression through suggestion, approval or criticism of building projects for their communities.

With the Contractors

A Good Organization

By WM. E. HAGUE.

ON February 8th the General Contractors' Association of San Francisco held its annual election of officers, and the following stockholders were elected to serve on the Board of Directors for the ensuing year: H. W. Beach, A. H. Bergstrom, John Biller, Chas. A. Day, Grant Fee, Edw. Ginley, Chas. W. Gompertz, Chas. J. Lindgren, P. J. Lynch, F. H. Masow and Chas. Wright.

The Board is to hold a meeting on the 13th of February, when the President, Vice-President, Treasurer and Secretary will be elected. With one exception the former Board of Directors was re-elected, and this was largely owing to the successful manner in which the Board has governed the association during the last year. This organization is now the leading association of builders in this city, and has made great progress since its incorporation on April 6, 1911. There are 115 stockholders at this time, and all are men of good standing in the business. The general contractors are stockholders, and there is also an associate membership of 330 specialty contractors, material men, etc.

The fact that the stockholders are conducting their business on fair and legitimate lines, and that the association stands for efficiency and responsibility, is becoming well established, and it must be only a matter of time when the architects will begin to realize this and will seek to let their work to the stockholders of the association.

It is undoubtedly a good thing for the building business in general that there should be such an association among the general contractors, and this influence is bound to have a tendency to place the business on a better footing than in the past. It is something which has been needed for a long time. Frequently an architect not well acquainted with the builders will call in men to figure for him who are strangers and about whom he knows very little. If such architects desire a list of the stockholders of this association the same will be furnished gladly by the Secretary on application. In other large cities of this country there is a close relationship established between the local general contractors' association and the local chapter of architects In Toronto and Montreal local chapters of architects let all their work to the members of the general contractors' association in those cities, and the members of the contractors' association figure only with members of the chapter of architects. In this way the business of both the builders and the architects is regulated and placed on a solid basis. Perhaps it is too much to expect that such an understanding could be arrived at in this city, but certainly a closer relationship between the better class of architects and the better class of builders in this city could be made to work to mutual advantage.

Contract Let for the New Headquarters of the General Contractors' Association.

The well-known firm of builders, Lange and Bergstrom, has been awarded the contract for the Sharon building, to be erected on the northeast corner of New Montgomery and Jessie streets, San Francisco. The price is around $375,000, but it has not yet been made public. This includes the entire work on the building, the contract having been let as a whole. Mr. A. H. Bergstrom, of the above firm, is known as the "Fair Builder," as he has had large experience in erecting buildings for the different world's fairs which have taken place in the last ten years. Mr. E. Lange, the other member of the firm, has been in the building business for the last fifteen years, and the firm has erected a number of the large buildings now standing in this city.

Mr. George W. Kelham, the well-known architect and member of the advisory board of the Architectural Commission for the World's Fair, is the architect for the Sharon Estate. The building will be second to none in the city, and will be absolutely fireproof throughout. The General Contractors' Association will have its headquarters on the ground floor and mezzanine floor of the building, and they will far surpass the meeting quarters of similar organizations in the West.

The fact that the entire work for this building has been let as a general contract is the result of Mr. George W. Kelham's wide experience in the building business, which has taught him that the most satisfactory way of letting a contract is by awarding the entire work on a building to one responsible general contractor. Only seven bids for the work were received, from a list of thoroughly responsible bidders. The firm of Lange & Bergstrom being the low bidders, were called in to refigure certain parts of the work and the contract awarded to them. This clean and business-like method of letting a contract might well serve as an illustration to some San Francisco architects, who are today ruining their own business by resorting to bad practices in calling for bids on the work on which they are the architects.

There is no excuse for an architect who calls for general bids for the entire work on a building and at the same time takes segregated bids for the work, or afterward calls for segregated bids. It is not a fair deal to the builders, and when the contract is finally awarded after being peddled around and the contractors "Jewed" down to the last dollar, the owner must expect to get in his building the work and material which must come as the result of such practices. He is bound to get a poor building and bound to be "skinned" wherever the contractor can possibly beat him—and poor buildings are certainly the poorest investment an owner can make in this magnificent up-to-date city. If owners and architects would bear these facts in mind the business might be elevated and themselves benefited.

The Sharon Estate, with practically unlimited means at its command, is proposing to erect several other buildings on lots which they own on New Montgomery street, and this street will shortly become one of the main thoroughfares of the city. The particular building mentioned above is already rented, to a large extent, to architects, contractors, material men, etc., and will undoubtedly become the headquarters for the building business after its completion.

* * *

Not a Bad Name for It

"The working drawings are all right," said a client to a Spokane architect, "but I would like to have you draw me a 'prospectus' which I can show my friends."

Among the Architects

American Institute of Architects

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Oakland Architects' Society

Meets Third Monday Each Month.

PRESIDENT.....LOUIS S. STONE
SECRETARY-TREASURER .....WILLIAM J. WRIGHT

January Meeting of San Francisco Chapter, A. I. A.

By SYLVAIN SCHNAITTACHER, Secretary.

THE regular monthly meeting of the San Francisco Chapter, A. I. A., was held at the Tait-Zinkand Cafe on Thursday evening, January 18.

Mr. Faville, chairman of the Committee on Civic Improvements, submitted a written report giving the reasons advanced by the Special Civic Center Commission for the selection of the City Hall site as the nucleus for the civic center, which report was ordered received and placed on file. Mr. Faville commented favorably on the recognition of the Chapter shown in the selection of Mr. Howard, the president of the Chapter, as chairman of this Commission.

Mr. Dutton, chairman of the Building Laws Committee, made a verbal report, stating that his Commission was at work making a comparison between the San Francisco building ordinances and those of eastern cities, and expected that a full report covering the suggested changes in the ordinances would be ready in about six weeks. The report was ordered accepted.

Mr. Faville, in the absence of Mr. Mullgardt, submitted a written report for the Committee on Architectural League and Education, which was ordered received and placed on file. The report referred to the first traveling scholarship competition, and to the fact that the drawings submitted in competition were to form the main exhibition of the next convention of the Architectural League of the Pacific Coast, which was to be held at Los Angeles, February 23-24. It also referred encouragingly to the atelier work of the San Francisco Architectural Club, and suggested that as large a number of Chapter members as possible attend the convention at Los Angeles.

Mr. Faville, chairman of the Committee on the Voorhies Table, submitted a written report, stating that the amount of subscriptions, $800, had been raised; the table bought from Mrs. Voorhies, repaired and sent to Washington, where it was received in good condition, and the thanks of the Institute sent in appreciation of the gift. The report was ordered received, placed on file, and the Committee discharged with thanks.

Mr. Vogel, chairman of the Committee on Form of Contract between Architect and Owner, stated that in view of impending action by the Institute, the Committee be granted further time, which was allowed.

Messrs. Herbert A. Schmidt and Edward C. Hemmings were elected to Chapter membership.

The following communications were ordered received and placed on file: From the General Contractors' Association, in regard to general contract form; from the National Conference on City Planning, asking for suggestions; from Messrs. Perkins and Works, Senators, and Messrs. Raker, Kent, Kahn and Hayes, Representatives, acknowledging the Chapter's resolutions recommending the site on the Mall for the location of the Lincoln Memorial, and offering their support of same.

At the suggestion of Mr. Mathews, Mr. Faville was called upon to inform the Chapter as to the work being done by the Architectural Commission of the Panama-Pacific International Exposition. Mr. Faville made a detailed statement of the work done by the Commission in the examination of the various sites, stating that each site had been investigated as to its possibilities; first, as to an ideal arrangement; second, as to the cheapest arrangement, and third, as to a compromise. Combinations had been studied as between Golden Gate Park and Lincoln Park, the Presidio and Harbor View. The reports and sketches submitted to the Commission had been most exhaustive and covered all practical points of building, conduit, sewer pipe, grading and power requirements. Mr. Faville was of the opinion, from the reports submitted and the amount allowed for buildings, that the major portion of the Exposition would be on the Harbor View site, and that the only permanent building to be built by the Exposition Company would be the auditorium on the site at the proposed civic center.

Convention Postponed

The second annual convention of the Architectural League of the Pacific Coast, notice of which recently has been issued, it has been found necessary to postpone until early in April. Further announcement, including outline of the program, will be made in the March number of The Architect and Engineer.

A. F. ROSENHEIM,
President.

Los Angeles, February 15, 1912.

Personal

Mr. J. Bain, for several years in charge of the architectural work at Stanford University, has resigned and will practice the profession, having established an office in Palo Alto and in the near future he will open an office in San Francisco.

Architect Willis Polk has returned from a trip to Chicago, New York and other eastern cities.

Report of the Committee on Architectural League and Education

The Committee on Education begs to report that the Architectural League of the Pacific Coast has arranged for holding its first Traveling Scholarship Competition through its Education Committee of San Francisco. The date of the (Esquisse) sketch was set for January 6, 1912, between the hours of 9 a. m. and 12 p. m. Five students from Los Angeles, one from Portland, one from Seattle, fifteen from San Francisco and five from the University of California did the (Esquisse) sketch, and are presumably in the competition.

The competitors will have until February 17, 1912, to complete their drawings, the subject being an open-air theater seating 10,000 people, connected with a festival hall seating 2000. The drawings required are a general plan, one elevation and one section, drawn to a scale of 1-16 inch.

All drawings to be delivered in Los Angeles, where they are to be judged, and subsequently form the main exhibition of the next convention of the A. L. F. C., which takes place February 23d and 24th.

The prize consists of $1000, which is to be used by the successful competitor for the purpose of pursuing his architectural study during one year, in accordance with an itinerary approved by the Education Committee.

It is the purpose of your Committee to encourage the education work of the A. L. P. C. in every possible way which may present itself. In this manner we hope to support the already established and united effort of all the architectural clubs, chapters, and similar bodies on the Pacific Coast.

The class attendance at the San Francisco Architectural Club has been very encouraging to the Education Committee since the student work was first inaugurated about two years ago.

The successive problems presented have indicated remarkable progress in the work presented by its respective students.

It is hoped that the next convention of the A. L. P. C. will be largely attended by the members of this Chapter.

It is suggested, therefore, that we go in a body to Los Angeles on February 21st, on the steamer Harvard or Yale leaving the dock at 5 p. m., and arriving about 10:30 o'clock the following morning, which is the date of Washington's birthday; and that we return in the same manner on the following Sunday, February 25th, which will be one day following the close of the convention.

Your Committee suggests that the Chapter take such action as would seem best to determine the number who will go.

Respectfully submitted to the Education Committee,

LOUIS CHRISTIAN MULLGARDT, Chairman;
GEO. W. KELHAM,
ARTHUR BROWN, JR.,
W. C. HAYS,
AUGUST G. HEADMAN.

Oakland Building News

Property on 16th near Jefferson street, Oakland has been sold for Dr. Geo. H. Derrick to Lillian Fuller for $27,000 and it is understood that negotiations are under way for the erection of a modern apartment house to cost at least $50,000.

More than a year ago excavations were started for a 5-story building at 16th and Jefferson streets for the Woodmen of the World. After the basement had been dug, work was temporarily suspended. The order recently has secured additional funds and construction is to be started as soon as contracts can be let. Building will be 100 x 150 feet and will cost about $100,000.

R. J. Pavert of Oakland is planning the erection of a 7-story and basement building at 15th and Jefferson streets, north of the old Y. M. C. A. property.

Los Angeles Office Building

Architect Harrison Albright, of Los Angeles and San Diego, is preparing plans for an eleven-story and basement class A building to be erected at the southeast corner of Grand avenue and Seventh street, for John Brockman, Security building. It will have a frontage 134 feet on Seventh street and 68 feet on Grand avenue. It will be a strictly modern structure with tile and marble entrance and corridors, plate glass windows, mahogany finish, freight and passenger elevators, steam heat, vacuum cleaning, plumbing, etc. The first story will be arranged for six storerooms and entrance to the building. The ten upper stories will contain 27 offices each, or a total of 270. The estimated cost of the building is $500,000.

Weeks Gets Woodland School

Architect William H. Weeks has been selected to prepare the plans for Woodland's $75,000 school building. A number of other architects were asked to submit drawings. One architect is reported to have been so persistent in his lobbying tactics that he was handed his plans and shown the door. Mr. Weeks won out on the merits of his design as he always does.

Hayes to Design Redwood Schools

Architect W. C. Hayes has been selected to design the new school houses proposed for Redwood City.

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LIMITING COMPETITION

When we sweep away all the halo which is thought to surround an architect crowned with a fat order, he is simply in a position of purchasing agent to secure the most that can be obtained for his client's money. He should not "play favorites," any more than he would if employed by the government or a corporation. To exclude this or that contractor for any other than business reasons makes him false to his trust. We know that in some architects offices there exists a favored few in each line whose bids are invited. For an outside man to "break into" these ranks would be sheer impertinence and would invite the sarcasm and indignation of the architect. This custom of limiting competition is susceptible of such abuses as "combinations" to boost prices, depending upon "influence" to alter specifications or permit substitutions—trusting to "pull" to secure passing of imperfect work or materials, laxity in enforcing penalties, etc., and it is a wonder that clients will stand for such a custom. It is opposed to the principles of competition, an open field and a clean-cut contest.

We are not arguing in this that irresponsible contractors should be employed, but simply that all things being equal, it should not be necessary for a good workman to also prove himself "a good fellow," "a mixer," or to have to cultivate the acquaintance of the architect and his office force in order to enjoy a chance to figure. One office we know of in the Northwest so closely guards its list that it is like gaining admission to an exclusive club to secure a place among the select. This firm recently took a government job and its record has been one series of delays and condemnations. The office managed to confine the work largely to its own men, who have "fallen down" ingloriously under the fire of official requirements and inspection. This firm has led

these contractors to think that they were all in one family and anything and everything would go. Uncle Sam did not recognize these conditions, and architect and contractors were thrown into a panic.

San Francisco is now emerging from a 2x4 enclosure into, as it were, a large open field and the shrewd architect will adapt himself to these new conditions.

THE HOME INDUSTRY CAMPAIGN

While the Architect and Engineer favors giving extra consideration—even a preference—to California products (whether of labor or materials) it suggests that a State which is claiming so much for its hospitality and asking so much from the World cannot afford to build too high a wall around its markets so as to shut out competition. First the slogan is, "Made in California," and now the lines are being more closely drawn until we hear, "Oakland for the Oaklanders," "San Diego for the San Diegoans," etc.

We may soon be able to classify structural work under such heads as "Misson work for the Missionites," "Elks buildings for the Elks," "Churches for the Converted," "Opera Houses for Singers," "Club Buildings for Club Members," etc. Business will then resolve itself into a social or religious or fraternal function, when, as it were, the trend of a man's mind, the cut of his coat, or the street on which he resides will determine the extent and character of his trade.

The new Stanford Memorial Library, it is announced, will be strictly a California product and it is now proposed to make the projected Oakland Auditorium an Oakland monopoly, so that everyone who sells goods or works in the Bay City can enjoy a good fat era of prosperity.

The inducement to foreign manufacturers to establsh offices here or to exhibit their goods at the coming Panama-Pacific Exposition with a view of securing Pacific Coast patronage, will most emphatically not be increased by a policy of arbitrarily closing up "the Golden Gate" of trade and commerce.

THE WOMAN ARCHITECT AND LOW COST HOMES

Marion Griffin, Chicago's only woman architect and a firm believer in equal suffrage, is working on a plan which she hopes will be a step toward solving the problem which Thomas Mawson, a noted English architect, pointed out as confronting the people of that city. Mrs. Griffin is designing what she believes will prove the ideal low-cost home.

She is working on the plans of a five room brick bungalow in which is to be combined the merits of beauty, practicability and moderate cost. "The idea of the architects throughout the country giving their combined efforts toward a solution of the low cost home problem appealed to me strongly," said Mrs. Griffin. "I agree with Mr. Mawson when he says that the modern American in a city is a cave-dweller. Flats are hideous and are anything but 'homey.'"

Mrs. Griffin is a graduate of "Boston Tech" and was the second American woman to take up architecture as her pursuit in life. Miss Hayden, who won the prize at the Chicago World's Fair, was the only woman architect in the country when Mrs. Griffin got her degree.

"Architecture is essentially a woman's work," she declares. "The domestic quality of architecture indicates that. And you would be surprised to see how readily contractors are willing to accept the word of a woman architect when they find out that she knows her work."

State, County and Municipal Engineering

Good Roads—Water—Sewers—Bridges—Fire Protection

Macadam Roads in California.

IN commenting on the reason why macadam roads in California are not of the best Mark R. Daniels, C. E., calls particular attention to the defects in construction. These are briefly summarized as follows:

Primarily, the macadam road must withstand the pressure of a load concentrated at four points, namely, the points of contact of the wheels with the road surface. It is evident that no matter how dense and hard may be the road covering if the soil beneath be soft, sooner or later the road will give way and a rut will be formed at these soft places.

For this reason the surface of the ground is cleared of all organic matter, soft places filled with good solid material and the surface rolled, tamped and treated until it becomes sufficiently hard and firm to withstand the traffic. This is called preparing the sub-grade. Since the character of the work here done is soon hidden by subsequent work, it is, like the political organization which gives it being, generally rotten.

But it is quite evident that while the sub-grade may be sufficiently firm to uphold the load, it will not, if composed of earth alone, withstand the wear of traffic. So a hard surface substance must be found to perform this service.

Broken stone immediately suggests itself. But broken stone will not serve the purpose unless held together and in place.

Experience has taught us that the best material is the finely crushed particles of stone, which, when wet, make a very good bonding material.

When such a road is built, each factor takes its olace in the equation, as follows: The sub-grade supports the actual weight, although it will not do so unless properly prepared. The coarse, hard rock withstands the attrition of the wheels and tires, while the stone dust and screenings maintain the coarser rocks in their relative position, thus acting as a binder.

On the sub-grade thus prepared are spread the materials for macadamizing. This is the point where the errors in method are so apt to creep in.

The method most commonly used on this coast is as follows: First, a layer of clean, coarse rock of a size which will pass through a two-inch ring, is spread upon the prepared sub-grade, four to six or eight inches thick, depending upon the amount specified. Upon this layer of coarse rock is spread a course, two to four inches, of fine rock or screenings.

The entire road is then saturated with water, when it is rolled until it becomes hard and firm. Let us now investigate the condition that obtains under such a method of construction.

In all bodies of broken rock there is perhaps about 30 per cent. of voids. The object in distributing screenings over the surface of the first course or layer is to supply a finer material which will fill the interstices of the broken stone and act as a bond, as before explained.

But in order to do the work properly the finer material must fill all the voids.

With the present form of construction, however, the finer material is spread upon the top of the coarse rock and wetting and rolling is resorted to to drive this material into the interstices of a six to eight-inch layer of coarse rock. Such a thing is mainfestly impossible.

It is true that a thorough saturating with water will tend to wash into these voids or interstices a larger percentage of fine material, but in no instance where I have made tests have I found all the voids filled.

The consequence is that the road presents a very smooth and even surface, which lasts just long enough to be accepted, when the loose support of the lower course begins to shift with heavy burdens, causing a rut, which, once started, like the rings created by the pebble in the pond, enlarges ever.

If the screenings, stone dust and all the finer materials were mixed throughout, or if the crusher run, as it is called, were used, a condition of no voids would obtain.

And yet we continue to construct roads in the manner dictated by the quarry men and contractors without stopping to analyze the problem or ascertain the cause of so many failures.

There are two reasons. One, that it is a cheaper form of construction; the

other, that it saves materials. Both of which benefit the contractor.

It is often contended by contractors that the screenings on top will wash and roll in sufficiently to fill the voids that are not filled by the forcing of the earth up from the sub-grade, but this is rarely true, and it is my opinion that no substantial macadam can be laid without using sufficient fine material well mixed with the broken stone to fill the voids.

Asphalt as a Base for Good Roads

WHEN automobiles came into general use they made necessary a revolution in road-making. Macadam highways, formerly regarded as the best type of permanent roads, soon wore out from the suction caused by the rubber tires of speeding cars. The suction drew out the fine binding material between the pieces of broken rock, which thus became loose and displaced, or were ground up by attrition.

So great is the injury to roads from autos that the state engineer of New York said some time ago that millions of dollars spent for macadam highways in that State had been wasted, as the new roads would wear out in a few years.

But proper treatment of macadam roads with asphalt or asphaltic oils has solved the problem of good roads. California has lead in this improvement, because of her great supply of such oils and their relative cheapness. There have been many mistakes in the "oiling" of roads, but experience has shown the best way to proceed, and the earlier errors should not be repeated.

The "penetrative" method of sprinkling roads with asphaltic petroleum has been found to give the best results. As used in this way the oil is not merely applied to the surface but becomes part of the roadbed and binds the rock and other material into a solid mass that cannot be disturbed by suction or vibration.

Asphalt is the base of California oils, which makes them well suited to road purposes, but some California oils are much better suited than others for such use, and special treatment gets rid of the volatile matter, so as to leave a residue of asphalt running from 30 to 60 per cent.

Asphalt or oil treatment of roads serves the double object of making a firm, smooth surface, impervious to wet, and of obviating the necessity of sprinkling with water in the dry season to keep down dust. Such sprinkling is a large expense with earth or macadam roads not treated with oil.—Sacramento Bee.

The New State Engineer

William F. McClure, formerly city engineer and councilman of Berkeley, is the new State Engineer appointed by Governor Johnson to succeed Nathaniel Ellery, term expired. McClure is 51 years old and is a native of Ohio. Ellery will probably take up the practice of his profession in San Francisco.

Progress of State Highway Plans

For several weeks the State Highway Commission has been giving its attention to the arguments advanced by various county delegations in the interests of their respective territories which are in line for recognition in the expenditure of the $18,000,000 fund for good roads in California.

Santa Cruz asks for a road that will be part of the great Coast highway that is proposed, extending from Sargent's Station and connecting the Santa Clara, Pajaro and Salinas Valleys. This is what is called the Riverside route and is preferred to another called the San Juan route.

The "Wishbone Route" which undoubtedly will be built, contemplates one road down the San Mateo Peninsula and another down the Oakland side of the bay to a meeting point in the neighborhood of San Jose.

Large sections of this road, already have been built and are thoroughly up-to-date, having been constructed according to the most approved methods of road structure and equipped with steel and concrete bridges.

It is announced by the Commission that not only must the counties build all bridges and give rights of way necessary to the building of the State roads, but incorporated cities will be expected to keep up their own roads. By this decision San Francisco alone, of all counties in the State, will be excluded from sharing directly in the $18,000,000 fund.

At the same time San Francisco escapes having to pay any interest on the bonds, as the counties will only be required to pay interest on the amount of money spent for roads within their limits.

A Lay of Ancient Rome

'T WAS far Wisconsin that produced the first minstrel of the good roads movement; he has to go back to the days of ancient Rome to get his inspiration, but he gets it all right. This Homer of the highways smites his sounding lyre and sings thusly:

"When Caesar took a westward ride and grabbed the Gauls for Rome, what was the first thing that he did to make them feel at home? Did he increase the people's loads and liberty forbid? No, he dug in and built Good Roads—that's what old Caesar did. Did Caesar put the iron heel upon the foemen's breast, or

did he try to make them feel the Roman rule was best? What did he do to make them glad he'd come their midst amid? He built Good Roads in place of bad—that's what old Caesar did. He built Good Roads from hill to hill, Good Roads from vale to vale; he ran a Good Roads movement till old Rome got all the kale. He told the folks to buy at home, built roads their hills amid, until all roads led up to Rome—that's what old Caesar did. If any town would make the town the center of the map, where folks will come and settle down and live in plenty's lap, if any town its own abodes of poverty would rid, let it get out and build Good Roads—just like old Caesar did."—Good Roads.

Good Roads Movement in the Pacific Northwest

(From the Pacific Builder, Seattle.)

AS AN indication of what concerted action can do to bring success for a legitimate public project the good roads movement throughout the nation is a shining example. It is evident, however, that the greatest enthusiasm has its abiding place in the Greater Northwest. Oregon, Idaho, Montana and Washington are each showing zeal in the movement and each has a disposition to co-operate with other states of the section in a move which means so much for the prosperity of all of them.

The Pacific Highway Association is one of the forces that is doing much to keep good roads agitation at white heat. From British Columbia to the southern boundary of California the work of this organization is being felt and a highway of surpassing excellence throughout that wonderful stretch of country is a foregone conclusion.

From the start Oregon has shown public spirit in the movement. Jackson county in that State has just voted $1,500,000 in bonds, the proceeds to be devoted to the development of roads, and when the legislature of the State convenes several bills that have been carefully prepared will be presented for consideration.

An intermountain convention was held at Pocatello, Idaho, some months ago, and the discussions were of such merit that interest has not only redoubled in Idaho, but in all of the states participating in the convention. Montana also held a convention, which brought about such practical results that extensive work is assured. Washington recently held a similar meeting, the results of which will be more and better roads for the State. The civic bodies throughout Alaska are making a united effort to secure larger appropriations from the national government for road work.

No public improvement can have a more healthful effect upon the country than the comprehensive scheme to unite its various sections with good highways.

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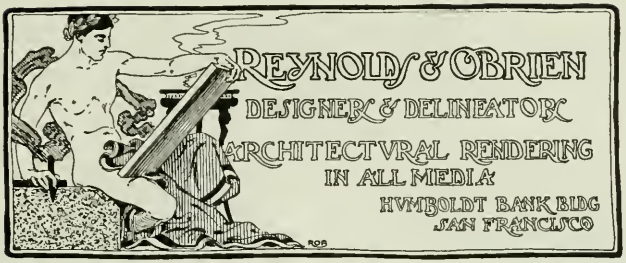

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It makes for the prosperity and upbuilding of every region. Every nook and corner of the country where highways are justified will undoubtedly receive proper attention before the great move now under way has run its course.

Ellery for City Engineer

If the newspaper reports, to the effect that former State Engineer Nathaniel Ellery is to be made city engineer of San Francisco, and actual engineer of the Panama-Pacific Exposition Company are true, both the city and Exposition securing the services of one so thoroughly competent and efficient, are to be congratulated.

Mr. Ellery's record for the past fourteen years as an employe of the State of California proves him to be a man of more than ordinary efficiency, and his fearlessness and integrity in fighting "combinations" and labor troubles, combined with the wide knowledge and experience he has had in this class of work, makes him stand alone as the one man acceptable and competent to fill successfully and satisfactorily the positions of city engineer of San Francisco and actual engineer of the great exposition.

The Bee as an Engineer

In the construction of the hexagon honey cells of material from her own body, the working bee at once has solved the problem of economy of room, of the lightest possible material of greatest strength, while the dividing wall in each honey case allows the greatest number of workers to continue "on the job." Strips of comb a foot wide and four feet long sustain a weight of thirty or forty pounds of honey, while the comb itself would probably not weigh more than five or six ounces.

New Cement Plant

A cement plant is to be erected at Portland, Oregon, along lines that are designed to obviate any undesirable feature that may arise from dust deposits such as has arisen at Colton, in San Bernardino county, California. The proposed plant is to be erected on the Willamette river in a section largely occupied by suburban residences, and will be constructed to meet the requirements for obtaining the best results. The new system to be employed will be entirely different from that generally in use, inasmuch as the new material enters the grinding mills in a semi-wet condition and is conveyed in this condition to the kiln where evaporation takes place, the fumes being carried off through a smokestack 180 feet in height and 10 feet in diameter. It will have a daily capacity of 1200 barrels.

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HEATING AND LIGHTING

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Indirect Illumination

SINCE the recent introduction of a new system of indirect light, which employs tungsten lamps and specially designed silver-plated reflectors in centrally located fixtures, indirect illumination is coming into more and more extensive use, and a choice between direct and indirect light has become a real engineering problem.

Indirect illumination unfortunately requires the fulfillment of a number of conditions which are not so essential in the use of direct light. Each installation must be planned and laid out in a scientific manner. Hit or miss guesswork in the planning of an indirect system of lighting for a given installation may result in a failure. It is this feature which retards the growth of this system of lighting.

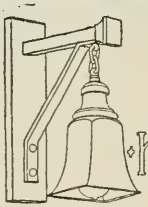
First of all the nature of the ceiling and the walls of the room, together with the purpose for which the room is to be used, must be taken into account, and it is this factor which usually determines the advisability of installing indirect illumination. A room to be equipped with indirect light must be free from skylights and overhead structures, such as roof trusses and line shafting, which will seriously affect the reflection of light. Beams may or may not be a hindrance, depending on the conditions of each individual installation. They become a serious hindrance only when they are placed close together and are fairly deep. In order to insure illumination at reasonable cost the ceiling must be an efficient reflecting surface.

A dull white ceiling is the best reflecting surface obtainable. It is essential also that the ceiling be of a dull rather than of a glazed finish, since the former will give a better diffusion of the light than the latter. For best efficiency the ceiling ought to be white, but because of the flat appearance of a dead white a light cream is preferable.

For highest efficiency the walls also ought to be white, but since they then have an irritating effect on the eyes it is best to finish them in a darker color. Such colors as gray, green, blue and red absorb a large percentage of the incident light, whereas light buff, dark buff and brown do not absorb such a large percentage.

The latter colors are to be preferred for wall tinting, since they subdue the light sufficiently with a lower loss of efficiency. The purpose for which a room is to be used must be such that the ceiling and walls will remain clean for a reasonable length of time and that the fixtures will not catch up unusually heavy quantities of dust and dirt in a short time.

It is evident that the indirect system is not suited to interiors in which skylights or dark ceiling decorations are used, as in some churches, and especially in the interiors of antique architecture or in which there are large overhead structures, as in shop buildings.—Construction Record.



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California's Mineral Production for 1910

Former State Mineralogist Aubury has prepared a table showing the total mineral production of the State of California during 1910. The grand total, not including precious metals, was $67,879,789, or a gain over the previous year of more than $6,000,000. The greater part of the gain was due to the following advances in values: Cement from $4,969,437 to $7,485,715; petroleum from $32,398,187 to $37,689,542, and natural gas from $616,932 to $1,646,343.

The production by substances in 1910, precious metals omitted, was as follows, including quantities and values:

Asbestos	200	tons	$ 20,000
Asphalt	184,967	tons	2,325,122
Barytes	860	tons	5,640
Bituminous rock	87,547	tons	165,711
Borax	16,828	tons	1,177,960
Brick	340,883	M	2,934,731
Cement	5,453,193	barrels	7,485,715
Chrome	749	tons	9,707
Coal	11,033	tons	23,484
Copper	53,721,032	pounds	6,677,586
Feldspar	760	tons	5,720
Fuller's earth	340	tons	3,820
Gems	.....		237,475
Gypsum	45,294	tons	129,152
Glass sand	9,124	tons	8,165
Granite	486,098	cu. ft.	417,898
Infusorial earth	1,843	tons	17,617
Iron ore	579	tons	900
Lead	2,594,257	lbs.	115,319
Lime	479,507	barrels	477,683
Limestone	684,635	tons	581,208
Mineral paint	200	tons	2,040
Marble	18,960	cu. ft.	50,200
Macadam	2,350,398	tons	1,104,526
Magnesite	16,570	tons	113,887
Manganese	265	tons	4,235

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Mineral water . .	2,335,259	gallons	522,009
Natural gas	10,579,933	M cu. ft.	1,676,367
Paving blocks . .	4,434	M	198,916
Pottery clay	249,028	tons	324,099
Pyrites	42,621	tons	179,862
Petroleum	77,697,568	barrels	37,689,542
Quartz sand	10,100	tons	10,100
Quicksilver	17,665	flasks	799,002
Rubble	3,477,430	tons . .	1,673,164
Salt	174,920	tons	395,417
Sandstone	165,971	cu. ft.	80,443
Slate	1,000	squares	8,000
Soapstone	740	tons	7,260
Soda	8,125	tons	11,862
Tungsten	.....		208,245

Eight-Story Hotel.

Architects Dennis & Farwell, 618 Fay building, have prepared sketches for an eight-story reinforced concrete hotel building to be erected at the northwest corner of Spring and Franklin streets for a syndicate being promoted by Ira W. Byrnes. The site is owned by the Phillips estate and will be leased for a long term. It is stated that about one-third of the necessary capital to insure the erection of the building has been secured. The building as planned will be 120 x 218 feet in size, and will contain 462 guest rooms and 112 bathrooms. It will cost about $400,000.

Hotel Building

Architect A. B. Benton, of Los Angeles, is completing plans for a fireproof hotel to be erected at Mesa, Arizona, for the Mesa Improvement Company. The building will be a two-story and basement structure containing six store-rooms in the first story and forty guest-rooms and twenty bathrooms in the second story. The construction will be of concrete and brick and will be fireproof throughout. Architect Benton is preparing a complete scheme for the improvement of the civic center and business section of the town.

The Heating Plant in the Hunter Flats

A feature of the F. L. Hunter flats, on Washington street, San Francisco, designed by Architect Henry C. Smith, and illustrated in this issue, is the hot water heating system planned and installed by J. C. Hurley, constructing engineer of heating systems, with offices at 12 Geary street, San Francisco. In designing the heating system for these flats the problem was to have virtually an independent heating system for each apartment, and at the same time have the heater located in a convenient and accessible position, so as to require only a minimum amount of attention. This was accomplished by using a gas heater and placing same in the kitchen of each flat, the piping being carried from there to the radiators in the several rooms of that apartment, on the same floor level. Another feature is the temperature control. As the water in the heating system reaches a certain temperature the gas flame is automatically reduced, thus keeping the cost of operation at a minimum.

Honest Concrete

We know a contractor—an engineer-contractor—who has been idle most of the year because he would not bid so low that, if he secured the contracts, it would be necessary to cheat (skimp on cement, etc.), or say good-bye to prospects of honest profits.

He is honest. He doesn't try to deceive himself into believing that he is justified in taking advantage of opportunities to cheat because he probably won't be found out and because he needs the money. He would rather not work than put in dishonest concrete.

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He is alive, up-to-date and able. But he knows his limitations. He knows that, when he has figured a job carefully, and added a modest margin for profit, to bid less than the materials, labor, etc., will cost him, would be dishonest. He knows that it is poor business to do work of which he will be ashamed or to do work in which there is no profit.

He refuses to part with his self-respect. He is a credit to the industry.

Would that there were thousands like him.

Recently competitors who have continuously under-bid him have been compelled to raise their figures so that he is now busy and at his own honest price.—Ex.

Hats Off! Please

Declaring that the plumbing trade was as honest as the ministry, officers of the National Association of Master Plumbers of the United States resented the reputation often given the trade.

Louis E. Deuble of Canton, Ohio, secretary of the organization, in addressing the delegates during their convention at St. Louis, last week, said: "A plumber is a gentleman in every sense of the word, a business man with ethics, morals and a conscience, the same as a preacher. We resent the reputation given the plumber that he is a 'bunco' and a 'grafter.'"

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The principal speeches of the session advocated sensible housekeeping rather than legislation as a solution to the plumbing problem.

A Good Answer

When Mr. Holdom, assistant to President Morron, of the Atlas Portland Cement Company, went to New York to assume the duties of his new position he knew very little about Portland cement. "I thought it was something to mend china with and I also had a pretty good idea that dentists used it to fill teeth with," he says.

But he knows more about it now.

The day of his arrival the boys in the Atlas office put up a job on him. Mr. Holdom was at his desk conjuring with the word "cement" when in walked a burly contractor in his working clothes. Mr. Holdom is always courteous and he said kindly:

"Well, sir, what can I do for you?"

"I'll tell you what I want to know," said the contractor. "I have a contract to lay a block of cement walk on upper Broadway in January and I want you to tell me how I shall keep the work from freezing after I get it laid."

There was a titter in the outside office and a dozen pairs of ears were listening. Mr. Holdom rose from his chair, threw his shoulders back and with his thumbs in the arm holes of his vest paced back and forth across the floor. Stopping abruptly before the waiting contractor, he said:

"I am very glad you asked that question. It is a question that comes up every winter. It is a question that seems to bother you contractors more than any other. I would hate to have had you undertake to lay that walk without first coming to see me. Always do that. I am here for that purpose and I want you to know it. If the other companies would only open their offices to contractors at all times things would be better."

"But about the——"

"Never mind about that. I am coming to that in a minute. Here, have a cigar. If there is anything that makes me delight in being connected with a great institution like this it is the opportunity it offers to make the acquaintance of men like you who have to lay cement walks in January. Just think of the millions who will walk on that cement laid by you. Think of that stream of humanity that will tread its way over that smooth surface on its way to the Great White Way."

"But I want to know——"

"Now do not be in a hurry."

Something fell in the outer office and there was a sound of scurrying feet.

"Isn't this beastly weather we have been having?" asked Mr. Holdom. "I like to be at my desk on days like this, especially when it comes to discussing with men on the firing line questions like cement work in January—I think that was the month you mentioned. Now I will answer your question—wait till spring to lay it."—Rock Products.

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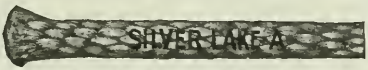

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By the Way

Some Industrial Information Worth the While

Big Order for Union Iron Works

The Union Iron Works Company of San Francisco has been awarded the $200,000 contract for furnishing the city of Los Angeles with three large water wheel generators for the aqueduct power plant. About 550 tons of machinery for this plant will be shipped in October. The Iron Works Company is also making preparations for laying the keel of a large steel pontoon for a 150-ton floating crane for the Pearl Navy Yard at Pearl Harbor, Hawaii, and the steel caisson for the new dry dock at Pearl Harbor will be launched in a short time, as it is now rapidly nearing completion. The pontoon will be 125 feet long, with a breadth of seventy feet and a depth of fourteen feet.

Extensive improvements at the iron works indicate the confidence with which San Francisco manufacturers are looking into the future.

A Perfect Stain

The art of beautifying and preserving wood to the highest degree of artistic excellence is no longer a difficult problem. The Bridgeport Wood Finishing Company, whose announcement appears on another page, has spent years of study and research in developing and perfecting a line of stains, fillers and other wood finishing products that has given their name first place in the wood finishing art.

The Whittier Coburn Co., San Francisco and Los Angeles and Rasmussen & Co., Portland, are Coast distributors for these famous specialties, and are equipped with large panels showing many of the beautiful and practical results produced with Bridgeport Standard Products.

Our professional readers will do well to acquaint themselves with the high quality of this material for use in their profession.

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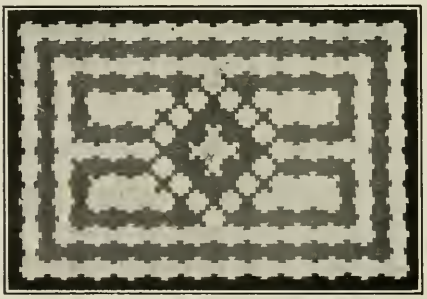

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Any combination of colors or design, to harmonize with interior decorations, can be made to suit the taste of the most exacting. Correspondence solicited.

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The Watson Mantel and Tile Company

Mr. Charles S. Watson has recently moved to San Francisco from Denver, where he and his brothers conduct the Denver Mantel and Tile Company business. The San Francisco branch is at 457 Market street where the firm has taken a lease for several years. The concern will be known as the Watson Mantel and Tile Company. It is one of the old established firms of the middle west and has been well known in mantel and tile business for many years. The Company will carry in stock a large assortment of the newest mantels, making a specialty of the faience designs which are being used very largely in the east. The firm will also do all kinds of tile floor and wainscot work, and will carry a splendid assortment of andirons, grates, firesets, screens, baskets, etc., for fireplace furnishing.

Draftsman Wants Position

Expert Draftsman of heavy building and construction work will accept position at $45 per week. Address 1461 Alice street, Oakland. Phone, Oakland 6887.

SITUATION WANTED.— Architectural tracer and letterer; rapid and neat. Four years' eastern and western experience. Best local references. Address Architect and Engineer, Box No. 20.

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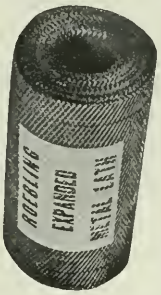

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Larger Quarters for the H. W. Johns-Manville Co., in Pittsburg

The rapidly increasing demand in Pittsburg and vicinity for the asbestos, magnesia and other products of the H. W. Johns-Manville Company, has necessitated a move from their present location in Liberty avenue, above Ninth street, to larger quarters.

The entire eight-story stone, reinforced concrete and steel building at the northeast corner of Wood street and First avenue has been leased by them for a term of years.

This building, 31 x 96 feet in size, totals in gross floor space approximately 23,808 square feet, and is one of the most substantial structures in the downtown section of Pittsburg.

"The Spacesaver"

M. E. Hammond, Board of Trade building, San Francisco, is handling the goods of the Spacesaving Appliance Company; goods that will appeal to architects of apartment houses and flats where space is at a premium. What the range is to cooking the Spacesaver is to cleanliness, usefulness and a "buffet kitchen." Following are some of the distinct advantages of the Spacesaver to the home:

1. The Spacesaver makes the kitchen from four to eight feet larger.
2. Space may be used for a refrigerator, cupboard, etc.
3. Washtubs are used about once a week. The sink is used continuously seven days a week, thus the space saved and used multiplies day by day.
4. Water cannot overflow from tubs to floor.
5. If the sink be turned up with water in it, the water cannot overflow to the floor.
6. No rotten tub covers to split and hold disease germs. Strainer can be cleaned. Ordinary strainers cannot be cleaned during lifetime of sink.
7. Where servants are engaged, and the bathtub feature (made possible by removable division in the tub) is used, privacy is given to the family bath.
8. A constant delight to mothers for bathing children—no leaning over.

H. W. Johns-Manville Company Change Their Office Location in Louisville

Owing to their increasing business in Louisville, Kentucky, the H. W. Johns-Manville Company have found it neces-

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sary to move their offices from the Lincoln Savings Bank building to 205 Paul Jones building. These new and more spacious quarters are better adapted to their requirements.

The office will be in charge of Mr. J. R. Chowning who is well and favorably known throughout that section of the country.

Seeking Data in Mineral Production

Mr. W. H. Storms, the recently appointed State Mineralogist, is now collecting data relative to mineral production for 1911, as required by law. The result of this work, published in an annual report, helps greatly in advancing the varied mineral interests of the State. The greater part of the information required is obtained by corresponding with the owners and operators of mineral property. Many in this locality probably have received inquiry blanks from the State Mining Bureau regarding the output and progress of work in the year 1911. Those who have received such are urged to answer them at once, and any who have only recently engaged in business, or who for any other reason are not on the lists of the State Mining Bureau, will be doing a public service by sending to the statistician, State Mining Bureau, Ferry building, San Francisco, Cal., their name and address, together with a statement of the amount and value of the minerals they may have produced in 1911, or are now developing. The State Mining Bureau should not be confused with either the United States Geological Survey, or the Federal Bureau of Mines.

World's Standard Wood Filler

The basic principle of wood finishing was originated years ago by The Bridgeport Wood Finishing Company in the form of Wheeler Wood Filler. This article through its peculiar merits has become known as the world's standard by architects and the trade in general. Today the whole line of Bridgeport Standard Wood Finishing Products are known and demanded where durability and economy are considered essential. Read their interesting announcement on page 137.

It is safe to say that no other firm in the country has been so largely instrumental in making it possible to obtain such a variety of beautiful and artistic results on the common woods in general use today.

The Bridgeport Standard Products are distributed on the Coast by The Whittier Coburn Co. of San Francisco and Los Angeles, and Rasmussen & Co. of Portland. Their exhibit of finished panels will be of interest to any architect.

R. Glaze, Contractor

R. Glaze, whose advertisement appears in this issue, is one of San Francisco's most successful contractors and builders. Glaze's offices are in the Humboldt Bank building. Besides general contracting, Glaze is superintendent of all construction and repair work carried on by the Keyes estate and the Dorn estate. A big warehouse is about to be erected for the Dorn estate on Davis street near Washington, under Glaze's supervision. Important contracts finished by him include the Te Kiteroa apartments at Pacific street and Van Ness avenue, costing close to $100,000.

Office Building

The contracts for the erection of the eleven-story and basement reinforced concrete store and office building at Fourth and Hill streets for the Black Building Company have been signed. The general contract was awarded to A. Barmann, 1934 Western avenue, for about $160,000. The total cost of the building will be about $370,000. Edelman & Barnett, Blanchard building, are the architects.

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Remarkable if True—Build a Fireproof Theater in Two Weeks

From the Merced County Sun.

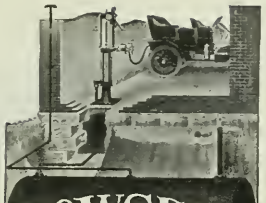
The first carload of lumber and material arrived today for the new Orpheum theater and will be unloaded on the ground late this afternoon. The work of demolishing the old Canal street theater will be finished this evening and with the large force of men at work the Merced Orpheum theater will be open and ready for business in about two weeks.

The new building will be fireproof throughout, with a new material of pressed steel on the outside and finished inside with the latest fireproof decorations by a well known scenic artist from Los Angeles. There will be four double fire exits down stairs and two from the balcony, with a separate entrance to each floor. The front of the building will have a large vestibule to the entrance with plenty of lighting all through the theater. The roof will be constructed in sections so that it will be readily turned into an airdome in the summer time.

Skyscrapers

From the Alameda Argus.

Where is skyscraping going to stop? There has been much speculation on this subject lately, owing to the fact that a building over 700 feet has been planned in New York. An architect qualified to speak on the subject says that he would not hesitate to run one up to the height of 1,000 feet. A building contracting firm comes forward and states that it will undertake to erect any building a competent architect may plan, regardless of its height. This might seem to discourage all talk of limits were it not for the well recognized fact that there is a point beyond which it is not possible to make a high building profitable. Because of the difficulty of reaching the upper floor with elevator service, and the time that would have to be consumed by tenants in getting to and from them, it is doubtful if floors beyond the 700-foot level can be made to pay, even in the very heart of commercially congested New York. Still, there is one threatening possibility. If the height of of buildings must at present be limited by the possibilities of the elevator service, is there not just a chance that somebody will erect a 2,000 or a 3,000-foot building and undertake to carry tenants to and from the upper stories by aeroplanes, running regularly up and down the outside and making stops at window sills when signalled. Even this would not solve the question of profit and loss. No mechanical reason exists for believ-



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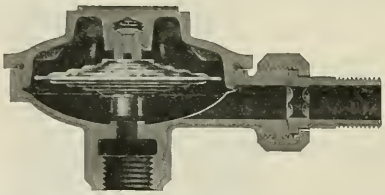

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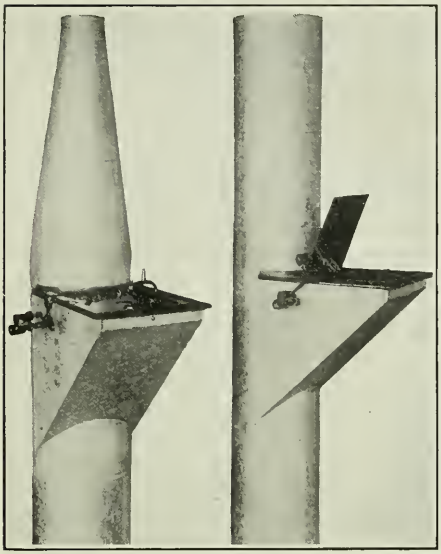

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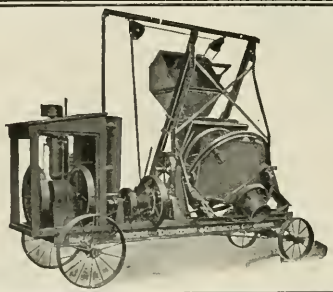

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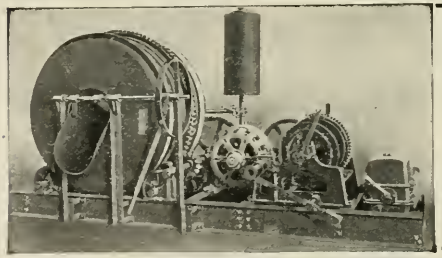

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ing that elevators can not be run as high as any building that can be constructed; the difficulty lies in the cost of service and the loss of time. The aeroplanes could hardly be run more economically than the elevators, and, at present, they could be run only in tolerably fair weather. It is not unlikely that a building much higher than any thus far projected will be constructed in the future, but it will probably rise above the others in the New York skyline, not because there will be any ordinary commercial demand for greater altitude, but because some particular private interest feels that it might lose something of prestige unless it should tower above all of its surroundings.

A Cube Mixer With Heating Attachment

There has just been placed on the market by the Municipal Engineering & Contracting Co., of Chicago, which has a branch warehouse in San Francisco, a cube mixer with heating attachment which it is stated is not only new to the manufacturers but to the trade in general. The device is a plain cube mixer mounted on trucks, with an ordinary charging elevator, boiler and engine. Under the charging hopper is a small steel box constituting a combustion chamber, lined with special fire brick. On the frame next to the boiler is a small air compressor which is belted directly to the engine. The air is compressed into tank at the right. Crude oil is placed in this tank and is forced by compressed air to the oil burner or atomizer that projects directly into the combustion chamber. The heat is generated in the chamber and the pressure of air drives it into the cube at an intense heat.

The company states that they have given this machine a thorough test, using 9 ft. of crushed rock and 10 gallons of liquid asphalt to a batch. With the stone thoroughly dry before being delivered to the machine a batch was turned out in three minutes. The stone was heated through and through and was too hot to handle with the hands. The company pronounces this machine a decided success.

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is a perfect coating for concrete, stucco or brick. It will protect concrete, brick or stucco against disintegration or hair cracking from moisture, give it any shade desired, can be used as a finishing coat instead of plaster on concrete walls, is applicable also to interior woodwork and for interior decoration, has been endorsed by the National Board of Fire Underwriters as a fire retarder and will therefore lessen your insurance rate. It does not destroy the distinctive texture of concrete. Will not drop off when applied above delicate machinery.

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Architects' Special Requirements in Hardware

It will be gratifying to many architects and contractors to know that there is a firm in San Francisco which has gradually built up its business and has increased its facilities for the manufacture of post caps, post passes, joist hangers and Underwriters' labeled fire door hardware.

The value of having such a factory as that operated by the Falls Manufacuring Co., Inc., for the production of this line of building requirements should be appreciated, as it is of great advantage in many ways to the architect, as well as the contractor and building supply houses.

Many of the special requirements often specified by the architect can be had from this firm, and all rush orders can be filled readily, as they carry a stock of standard sizes and have first-class facilities for the rapid production of all irregular or special requirements.

In many of the largest and best constructed buildings erected in San Francisco within the past few years their building hardware line has been installed and leading architects and engineers speak highly of their product.

The firm is well organized and has competent and capable employees who are ready at all times to lend any assistance which may serve to help the trade, gladly furnishing estimates for goods manufactured by them.

Lists of buildings wherein their product has been specified and installed, as well as names of architects who have used Falls' goods can be furnished, which in itself is a splendid testimonial as to the quality of the product.

They are about to distribute several thousand of their latest edition, No. 5 Catalogue of Building Hardware, which embraces many details of special benefit and help to the intending estimator or purchaser.

This concern has recently completed arrangements with F. T. Crowe & Co., of Portland, to become their sales agents for the State of Oregon, and with Galbraith, Bacon & Co., Inc., of Seattle, as agents for Washington and British Columbia. Both firms are reputable, and the most representative of their line on the Coast. Negotiations are now pending with several building material dealers throughout the State of California whereby the firm will be well represented.

Mr. J. C. Kortick, president and general manager of the Falls Manufacturing Co., Inc., is well known to the jobbing trade throughout the Pacific Coast as a manufacturer, having been in this business for many years, devoting his best efforts to the upbuilding of an organization that gives the best of satisfaction to

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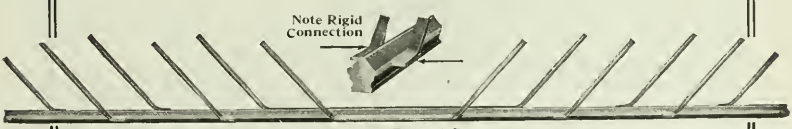

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the trade. He enjoys the distinction of being the guiding spirit of an enterprise that is practically the only one of its character on the Pacific Coast, and in the face of all the keen competition of the large eastern manufacturers has steadily advanced the business, and today it enjoys a very prosperous standing among Pacific Coast manufacturers.

Plumbing and Heating Contract Let

The plumbing and heating contract for the five-story reinforced concrete apartment house to be erected on Geary street, west of Jones, has been let by Rousseau Bros. to the Peterson-James Company of San Francisco. This firm has been established only since May of last year, although the partners have been in business here in other connections for five years past.

They have been successful in securing many good heating and plumbing contracts, including the Curtaz apartments, at Bush and Leavenworth streets; the Chas. F. Whittlesey apartments, at Clay and Haight streets; the 27-apartment building erected by the California Realty and Construction Company, at Clay and Larkin streets. Righetti & Headman, architects; the Thomas E. Rulfs apartment, Washington and Hyde streets, and the Franklin Realty Company's apartments, at Larkin and Bush streets.

They have just completed another job for Rousseau Bros., on the Anderson apartments, at Larkin and Sacramento streets, and have been awarded the contract for a new hotel and store building to be erected on East street, near Mission, by the F. A. Hihn Company of Santa Cruz.

Bricklayers' Agreement.

Anticipating the activity that there will be in the building line during the next four years in San Francsco, in consequence of the construction of the World's Fair buildings, and to insure stability to industrial conditions the Masons' and Builders' Association and the Bricklayers' Union of that city have signed a reciprocal agreement covering a period of four years, or until August 1, 1915.

The main provisions of the agreement are that the bricklayers' wages and hours shall remain just as they are at the present time, and it is agreed that the Bricklayers' Union will not under any circumstance authorize or countenance a strike, and the Masons' and Builders' Association agree as strongly not to authorize a lockout on any mason work in which either or both parties are interested until every honorable means of settlement has been exhausted, or except in clear cases of violation of this agreement.

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Santa Barbara Postoffice

A. W. Anson, of Albuquerque, N. M., submitted the lowest bid for the construction of the new postoffice building at Santa Barbara. Anson's bid was $104,500, which is well within the $110,000 appropriation.

The proposed building will be in the Spanish renaissance style. It will be built at the corner of State and Anapamu street, and cover a ground area of 6565 square feet. It will be two full stories and basement high and have an open court. The ground floor will be used exclusively for postoffice business. The upper floor will have quarters for the forestry service, civil service, treasury and customs department, army and navy bureau, marine hospital service and weather bureau. The building will be built on a steel frame, fireproofed with concrete and terra cotta, and red clay tile roof. The exterior walls will be of brick with granite base and belt courses, with marble stables between. Above the first-story belt course it will have stucco finish; ornamental cornice and frieze with redwood brackets. The entrance will be in marble, with bronze grilles and balustrades.

Clay Workers' Congress

Manufacturers representing the billion dollar clay working industry are to assemble in Chicago next month.

One of the most important conventions to be held at that time will be that of the National Brick Manufacturers' association. This organization includes the manufacturers of common building brick, facing brick, ornamental brick of all kinds, paving brick, fire brick and refractories, gas retorts, crucibles, glass furnaces and furnace linings, hollow block, sewer pipe, conduit for underground wiring, farm drain tile, silo blocks, fireproof hollow tile for skyscrapers, building terra cotta, architectural terra cotta, faience for interior work, floor and wall tile, mosaics, pottery, sanitary ware, semi-porcelain, chinaware, art pottery, kitchen ware, clay pipes, clay pidgeons, marbles and electrical insulators.

This association alone represents invested capital of a billion dollars and the annual products of the manufactories of its members are valued at more than three million dollars.

The American Ceramic society, the technical organization of the clay industry, will also meet in annual convention there. This society ranks with the British Clayworkers' Institute and is made up of scientists and college professors.

The National Paving Brick Manufacturers' association is another organization scheduled to meet in Chicago while the Clay Products and Permanent Home Exposition is being held at the Coliseum from March 7 to 12.

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Among these vacuum cleaning devices the Atwood Vacuum Cleaner, a contract for which has just been signed for the St. Luke's Hospital, San Francisco, takes a high rank. It embraces all the best features of the dust and dirt removing machinery and is one of the strongest and simplest machines on the market. The firm of Bill & Jacobsen, 524-26 Pine street, San Francisco, are the agents for this machine and the sole representatives for Northern California. Besides this they are also agents for the Bradshaw Sanitary Garbage Chute, a contrivance which is at once a convenient and sanitary device for every building.

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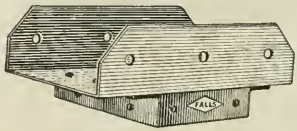

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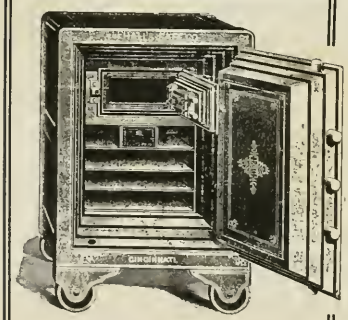

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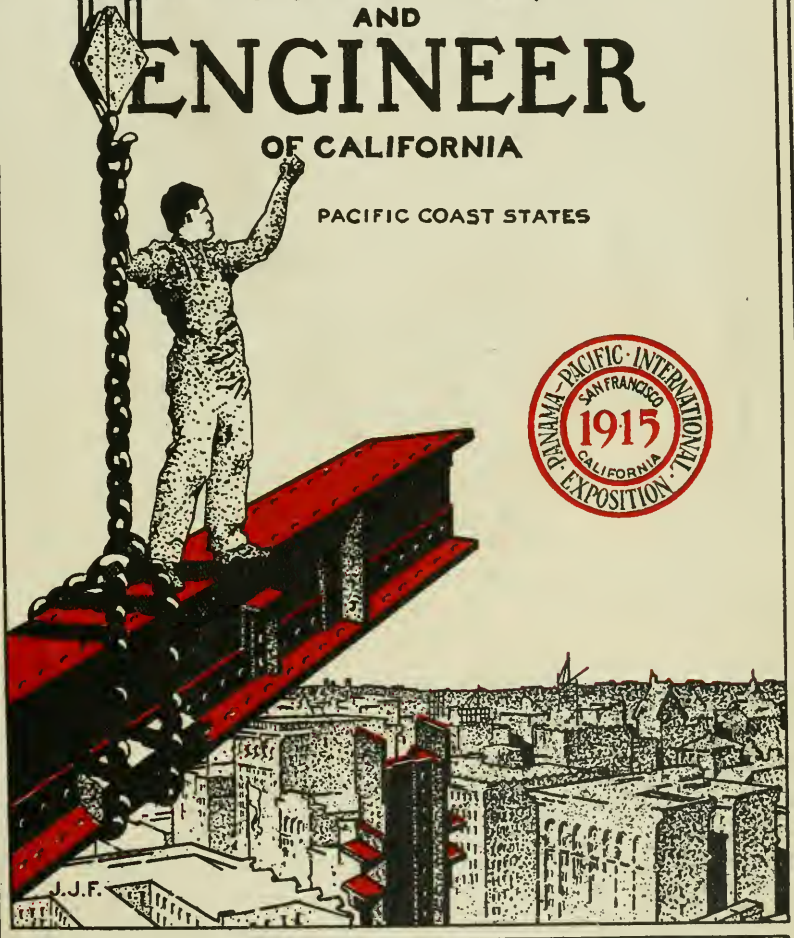

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San Francisco
Vol. XXVIII No. 2

MARCH, 1912

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Pacific Coast States

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PENCIL SKETCH, COLONIAL HOUSE
W. A. Sharp, Los Angeles

Frontispiece
The Architect and Engineer,
March, 1912.

SAN FRANCISCO
PUBLIC

THE
Architect and Engineer
Of California
Pacific Coast States

VOL. XXVIII. MARCH, 1912. No. 2.

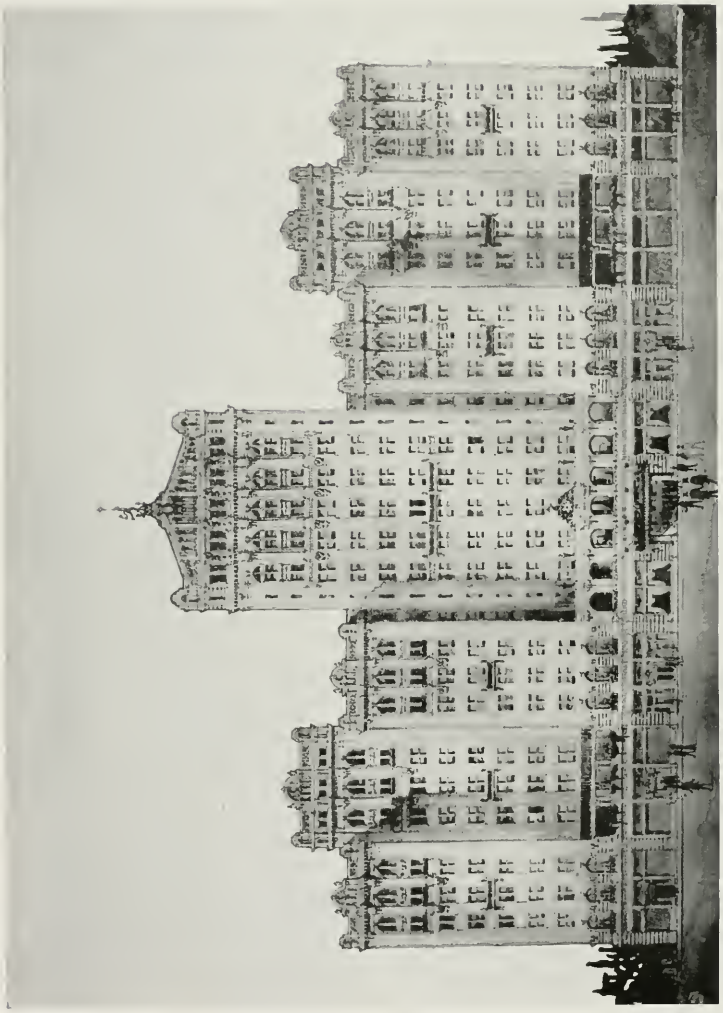
Residence for Mr. J. Eugene Law *Arthur R. Kelly, Architect*

Third Annual Exhibition of Architectural League of the Pacific Coast

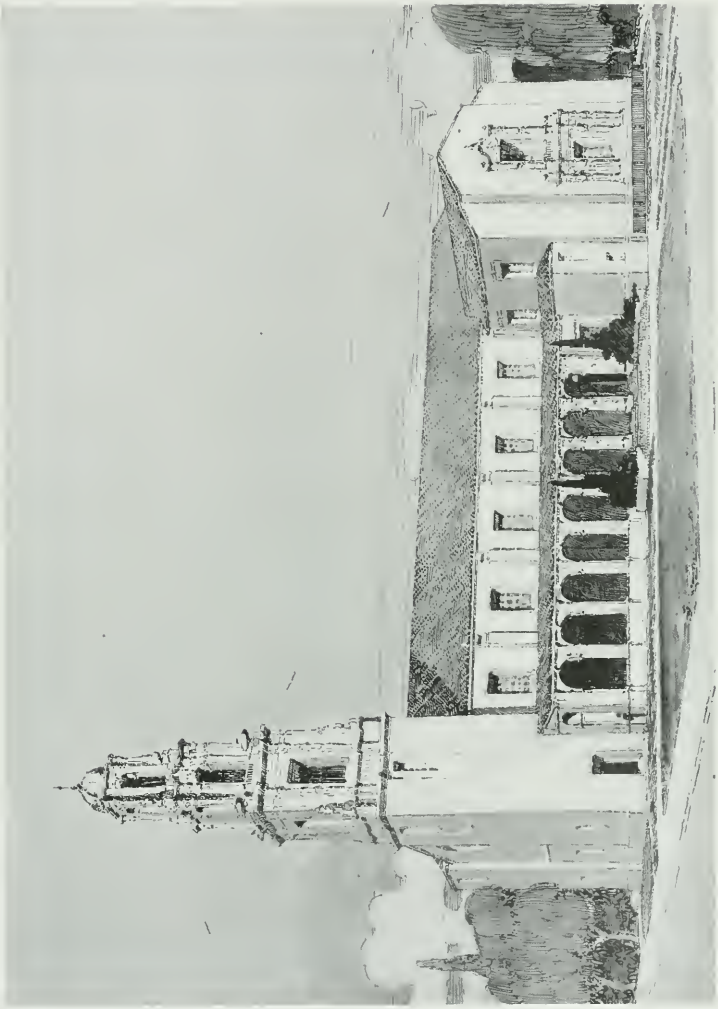
By ALFRED F. ROSENHEIM, Architect.

THE third annual exhibition of the Architectural League of the Pacific Coast, under the auspices of the Los Angeles Architectural Club, was formally opened on Friday evening, February 23d, to private view by invitation only. The attendance during the first week was about 17,000, and at the end of the second totaled nearly 25,000, which is quite remarkable, in view of the stormy weather which prevailed the greater part of the week.

The object of these exhibitions is educational, and we believe much has been accomplished along this line both by the past and present exhibitions. We have taken some care to note the comments made by visitors and observe the things which have excited the most interest among those who have no technical knowledge of architecture. The chief surprise was the readiness with which the really good architectural designs and schemes were picked out by the average layman who visited the exhibition. This should be encouraging to the architect who is interested in his work and is constantly striving to do something better. There is nothing more discouraging, with the exception of a dearth of clients, than prospective clients with an utter lack of appreciation of good architecture, or with a disposition to place the commercial phase of the building proposition above everything when there is no real necessity for doing so.



Hotel for Mr. John Brockman, Los Angeles, California — *Harrison Albright, Architect*

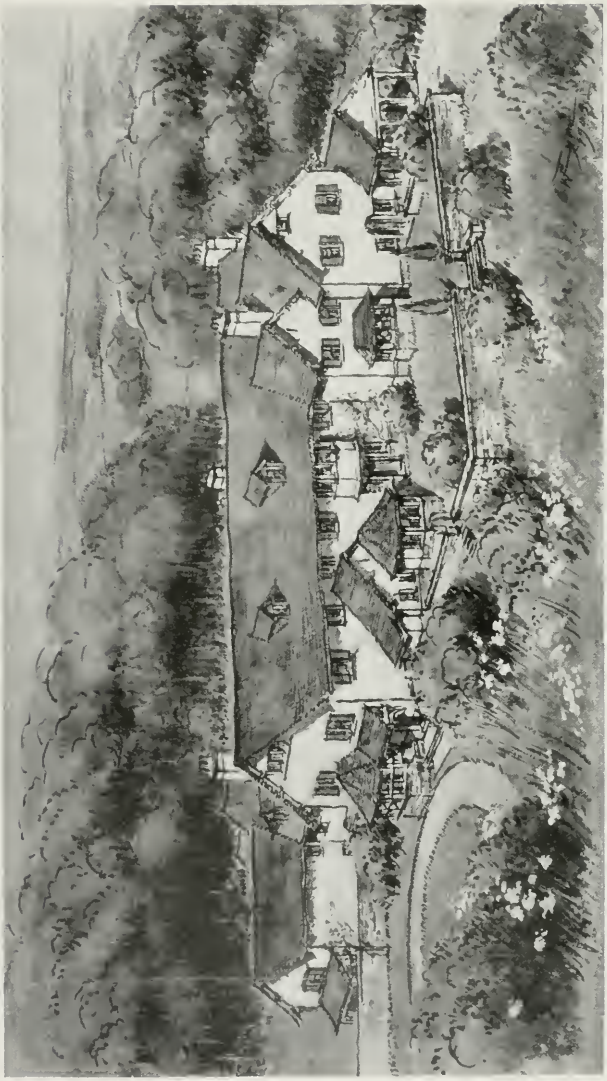


First Congregational Church, Riverside, California

Myron Hunt and Elmer Grey, Architects, Los Angeles

Anheuser-Busch Casino, Santa Monica, California — A. F. Rosenheim, Architect, Los Angeles

Artesia Grammar School *Withey & Davis, Architects, Los Angeles*



Country House, near Morristown, New Jersey

Wilson Eyre and Gilbert McIlvaine, Architects, Philadelphia, Pa.

House of Mr. J. N. Burns, Oak Knoll. View of West Garden Front and Pergola
Myron Hunt and Elmer Grey, Architects, Los Angeles, California

The recent exhibition was notable in several respects. One of these was the evident care and pains taken by most of the exhibitors to prepare material for the exhibition. A larger proportion of the drawings and pictures than usual were neatly framed or mounted. There was little evidence of things dragged hastily from their hiding places and submitted as an eleventh hour offering. The fears expressed by some, after the first exhibition, that there would be a dearth of material at future exhibitions have not been realized. The last one contained an abundance of new material. There is no reason why every architect should not have something good to show every year. There is ample time in the lapse of twelve months for the preparation of drawings for exhibition if the architect will only bear in mind that there is another exhibition coming, and that it behooves him to get something in readiness when he has the time and inclination instead of leaving it to the last minute. If this were done it would also lift a load of care and anxiety from the shoulders of the men who each year sacrifice their time without remuneration to the management of the exhibitions.

Another notable feature of the exhibition was the work shown by the younger archtects. Their perspectives, finished drawings and sketches formed a large part of the exhibit, and these were conspicuous for the skill and talent displayed. There was apparent an unconscious, if not an open, rivalry in the production of good designs and schemes. The constant striving to do something good, or to use a common slang expression, "something classy and snappy," and to do something better is apparent. All of which argues well for the architectural profession of Southern California, for it means a high standard of architectural work. We do not think it is necessary for anyone to go outside of Los Angeles at the present time to obtain an architect to handle any building problem, and there will be less incentive or excuse to seek talent abroad in future years if the present trend of effort is maintained. We hear a good deal about cheap building and architectural monstrosities in this section of the country, some of which is justified, but we do not know of any place where there is keener rivalry among the architects to excel in good work than in Los Angeles. Speculative buildings is a misfortune to any community, but it is a seemingly unavoidable evil in every new country.

Southern California is still in a state of development, but permanency in building will come with established and stable conditions in other lines of business; and permanency in building means better architecture and better construction. These conditions are nearer at hand, we believe, than many persons are willing to admit. The architects who are now seeking to educate the public mind to appreciation of the best in architecture doubtless have a rich harvest ahead.

Residence of Mr. D. B. Gamble
Greene & Greene, Architects, Pasadena, California

House for Mr. George W. King, Marion, Ohio
Wilson Eyre and Gilbert McIlvaine, Architects, Philadelphia, Pa.

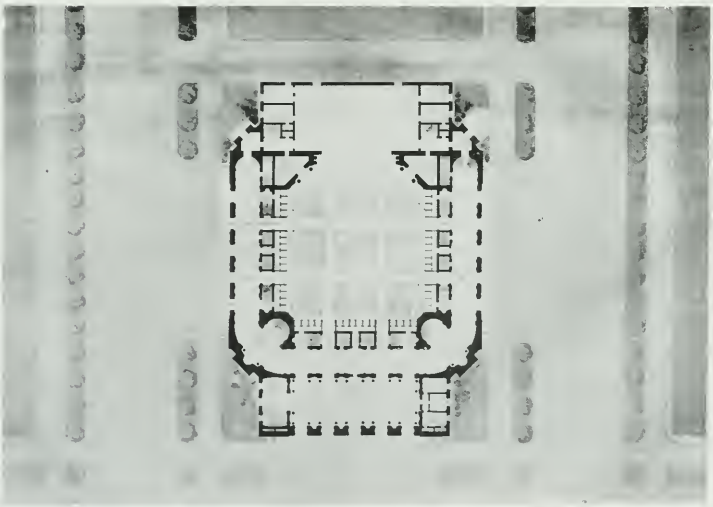
House for Mr. W. W. Morgan
Walker & Vawter, Architects

Grant Residence, Los Angeles, California
A. C. Martin, Architect, Los Angeles

Cottage for George Junior Republic, Chino, California

Myron Hunt, Architect, Los Angeles

Public Auditorium
Francis Pierrepont Davis, Architect



Public Auditorium
Francis Pierrepont Davis, Architect

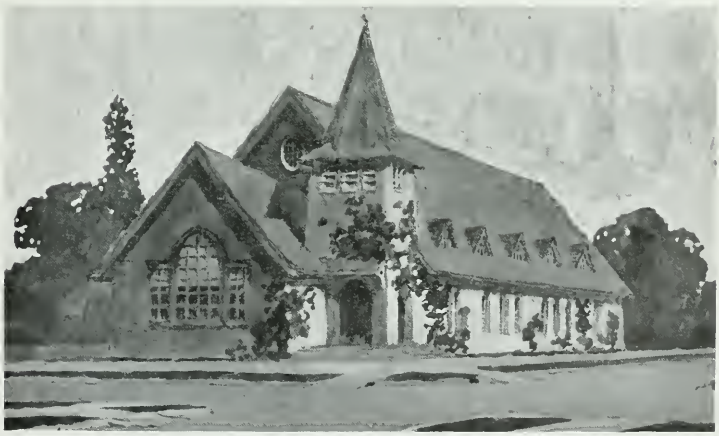
Sketch for Grammar School

Withey & Davis, Architects

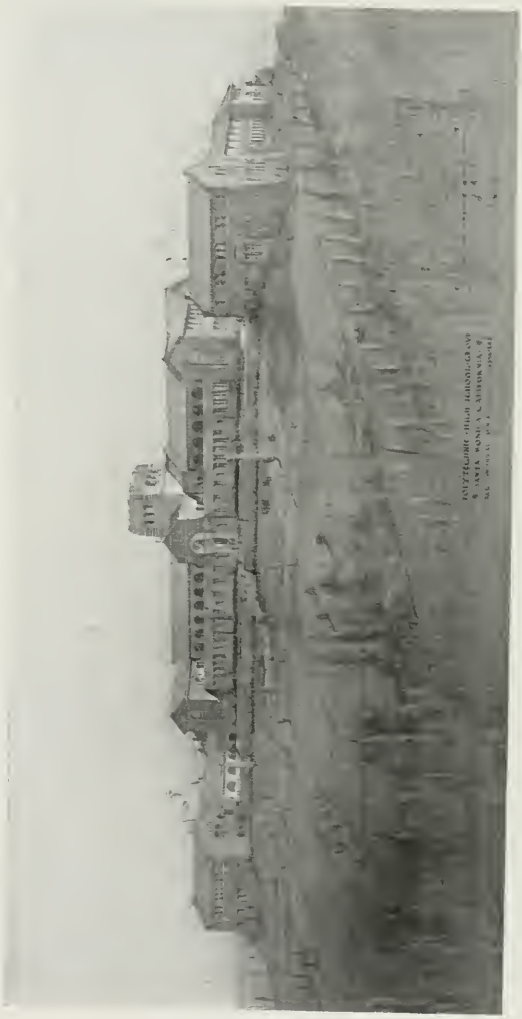
Los Angeles, Country Club, Los Angeles California

Hunt & Burns, Architects

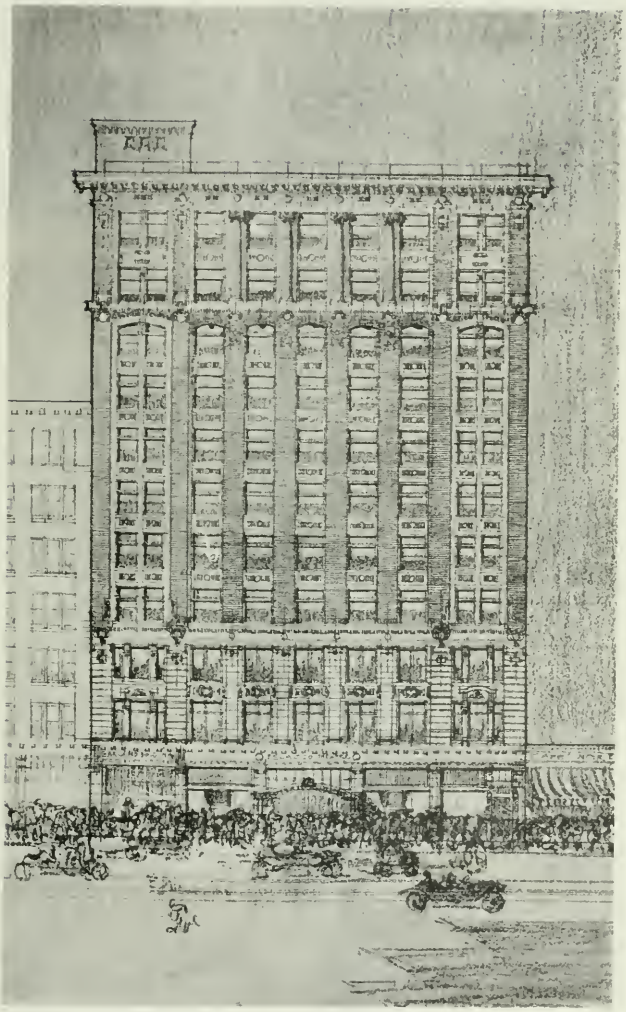
Wattles Garden, Showing Extension
Elmer Grey, Architect of Extension *Myron Hunt and Elmer Grey, Architects of Original Garden*



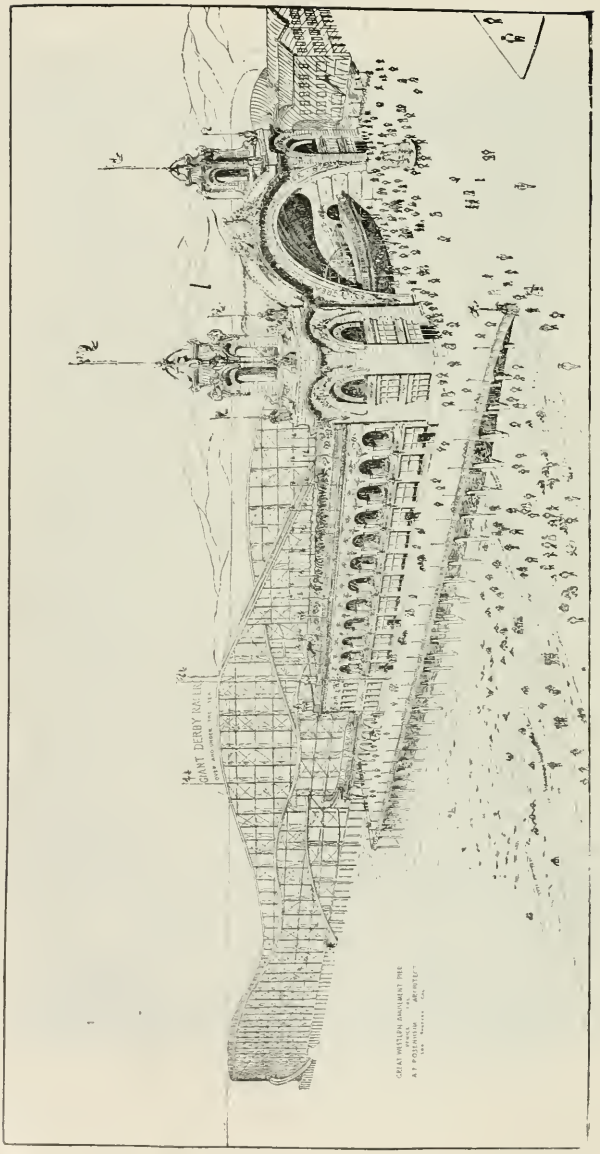
Church for Easton, California
Elmer Grey, Architect, Los Angeles



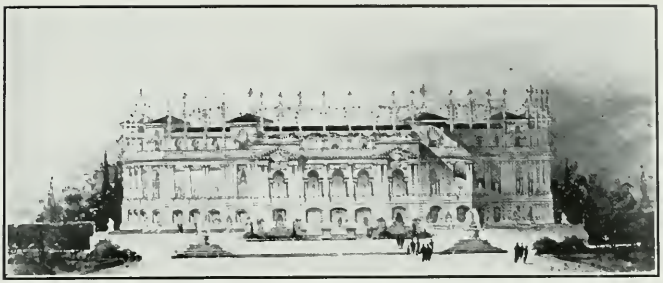
Polytechnic High School, Santa Monica, California
Allison & Allison, Architects, Los Angeles



Belasco Theater and Office Building, Los Angeles, California
Morgan, Walls & Morgan, Architects



Great Western Amusement Pier, Venice, California
A. F. Rosenheim, Architect, Los Angeles



Front Elevation, a Festival Hall and Open Air Theatre
Edward L. Frick

Winner of Architectural League $1,000 Scholarship

By F. M. KRAMER.

THE one thousand dollar scholarship given by the Architectural League of the Pacific Coast for the winning design in a competition for the architectural students of the Pacific coast, was won by Edward L. Frick, a member of the atelier of the San Francisco Architectural Club and studying under the supervision of Mr. Arthur Brown, Jr.

Mr. Frick was awarded the prize by a jury consisting of Henry Bacon, H. Symmes Richardson and Thomas Hastings of New York; Robert D. Farquhar and A. F. Rosenheim of Los Angeles; and L. C. Mullgardt, Geo. W. Kelham, W. B. Faville, John Galen Howard, Arthur Brown, Jr., L. P. Rixford, G. Albert Lansburgh, Clarence E. Howard, Wm. C. Hays, Clarence R. Ward, Willis Polk, John W. Bakewell, Jr., and Ernest Coxhead of the San Francisco chapter. The competition was keen and exciting and it was only after much discussion that Mr. Frick was given first mention, with S. L. Jory, C. I. Harrison, F. P. Davies and Harry Michelsen placed in the order named.

Mr. Frick, although young in years, is perhaps one of the most proficient and competent members of the Architectural Club's atelier and is, therefore, we feel, equal to the task that this scholarship calls for. He has worked hard and as a member of the ateliers of Messrs. Lansburgh, Kelham, and Brown, and the San Francisco Architectural Club, displayed exceptional ability. The honor and distinction of being the first student on the Pacific Coast to take the "Class A" problems of the Beaux Art Society of Architects of America belongs to him. At present he is massier of the Architectural Club's atelier and under his guidance it has progressed very rapidly.

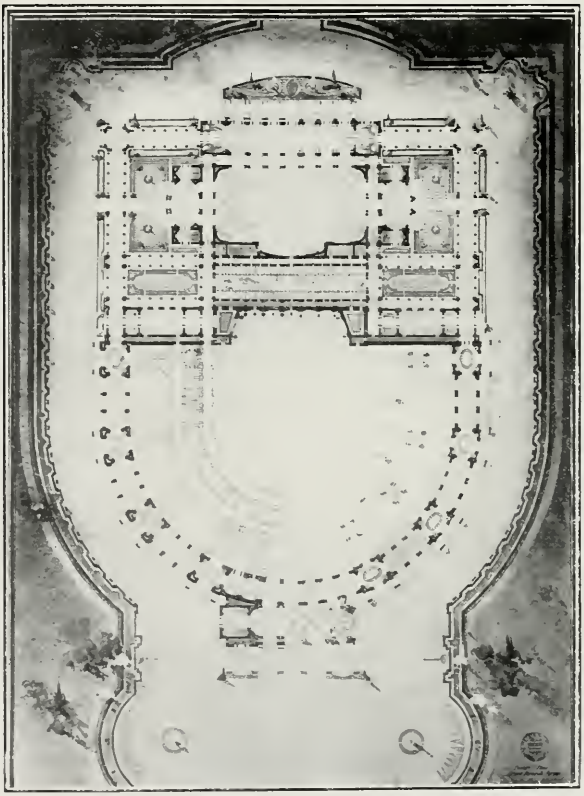
The drawings submitted by him are of wonderful workmanship and skill and are highly praised by all members of the architectural profession.

Much credit is due the sixteen competitors for this prize as it may readily be seen from the program that the problem was a difficult one and as the time allowed was but five weeks it required a great deal of hard, consistent work to enable them to finish.

The gist of the program follows

Subject: **"A Festival Hall and Open Air Theatre."**—At a World's Fair to be held in a locality noted for its mild, equable climate it is pro-

Sectional View, a Festival Hall and Open Air Theatre



A Festival Hall and Open Air Theatre *Edward L. Frick*

posed to "feature" out-door assemblies such as conventions, concerts, etc. The usual "Festival Hall," a part of this program, becomes, therefore, of less importance and serves mainly during bad weather or for small gatherings, recitals and the like. The structure is intended not only for Exposition purposes but will be a permanent adjunct to the city's distinctive out-door life, and should have an architectural character expressive of this two-fold use.

Site.—No restrictions are placed on the designer as to site, other than the maximum dimensions—320 by 500 feet—and the assumption that the land is approximately flat. It is to be regarded as terminating one end of an important axis of the Exposition Grounds.

Building.—The composition is to embody:

(A) An Open Air Theatre (seating eight thousand or upwards).

(B) A Festival Hall (seating not over two thousand).

Both must be provided with ample circulation, ticket offices, lobbies and entrances. There shall be stages and assembly spaces, dressing rooms, etc., adequate for great choruses, orchestras, etc., but no fly galleries or other provision for elaborate scenic effects are necessary.

Drawings required are as follows:

For the **preliminary sketch**: plan, elevation and section at 1/32-inch scale.

For the **Rendering**: plan, elevation of principal facade, and section perpendicular to the facade; all at 1/16-inch scale.

The final drawings shall be made on "Whatman Papers," 25 inches by 38 inches; the elevation to have conventional cast shadows.

* * *

Brickmakers were First Strikers

According to scriptural quotations brickmakers were the first strikers, as is shown by the following extracts from the Bible:

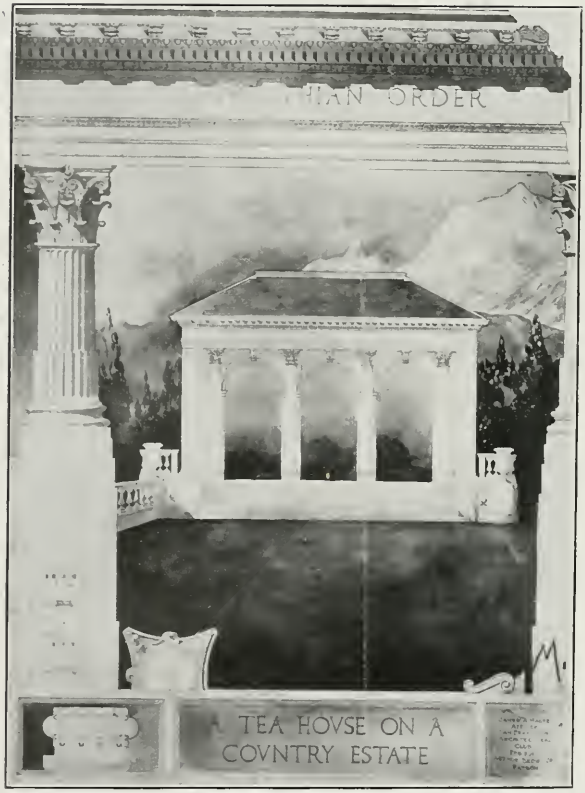
"And the Egyptians made the children of Israel to serve with rigor. And they made their lives bitter with hard bondage, in mortar, and in brick and in all manner of service. And Moses and Aaron went in and told Pharoah, 'Let the people go that they may hold a feast.' And the King of Egypt said unto them, 'Wherefore do ye let the people from their work? 'ye make them rest from their burdens.' And Pharoah commanded the same day the taskmasters, saying, 'Ye shall not more give the people straw to make bricks as heretofore. And the tale of the bricks which they did make heretofore, ye shall lay upon them; ye shall not diminish aught thereof; for they be idle; therefore, they cry, saying, 'Let us go.' Let there more work be laid upon the men, and let them not regard vain words.' Pharoah said to the children of Israel, 'Ye are idle, ye are idle; go therefore now and work; for there shall be no straw given you, yet ye deliver the tale of bricks."

What followed is a matter of history. They walked out and stayed out for forty years, and then their descendants got other and better jobs.

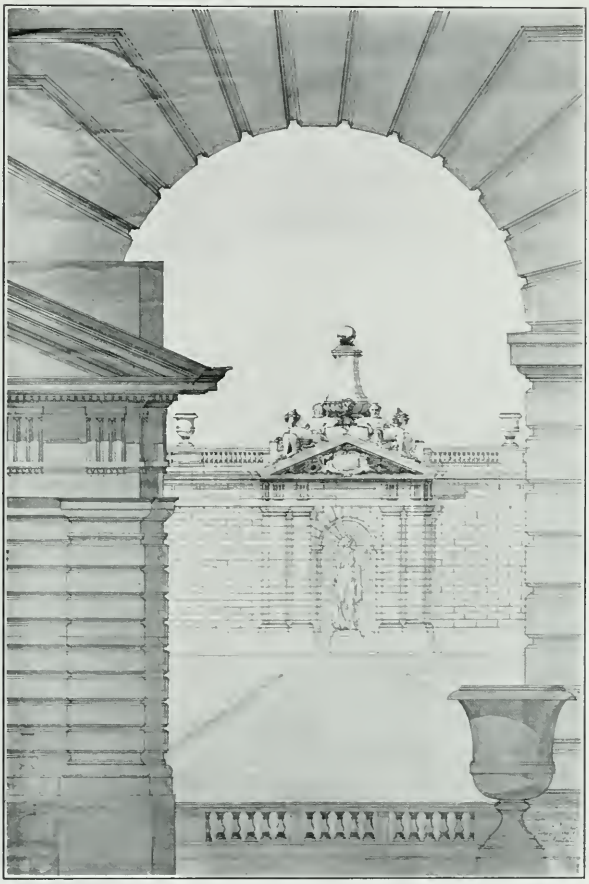
* * *

Ancient Reinforced Concrete

A recent examination of the roof of one of the numerous ancient tombs along the Appian Way, between Rome and Brindisi, Italy, revealed the construction of a roof slab made of hydraulic cement, reinforced with bronze rods crossing each other at right angles, thus forming a lattice reinforcement.

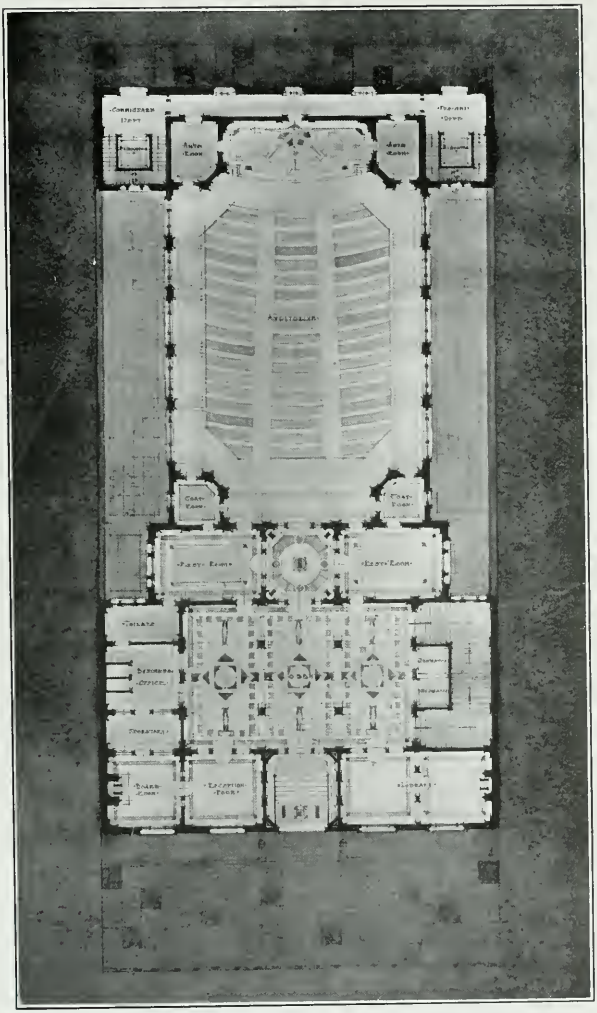


A Tea House on a Country Estate
San Francisco Architectural Club (Atelier)
James A. Magee, Mention, Placed *Arthur Brown, Jr., Patron*

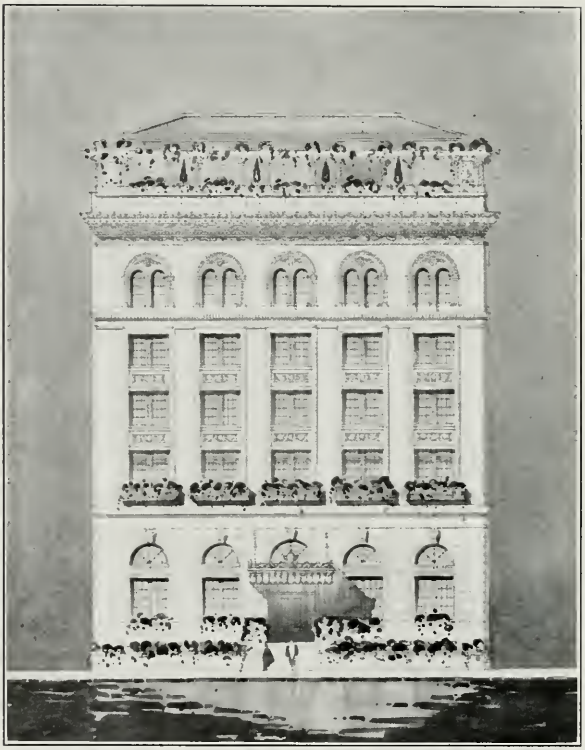


A Niche in a Retaining Wall
San Francisco Architectural Club (Atelier)
Howard Schroder, Mention, Design *Arthur Brown, Jr., Patron*

Elevation for a Young Women's Christian Association Building
San Francisco Architectural Club (Atelier)
Edward Flanders, Received First Mention in New York *Arthur Brown, Jr., Patron*



Floor Plan for Young Women's Christian Association Building
San Francisco Architectural Club (Atelier)
Russell Monson, Received Mention in New York *Arthur Brown, Jr., Patron*



Elevation for a Young Women's Christian Association Building
San Francisco Architectural Club (Atelier)
Russell Monson, Received Mention in New York *Arthur Brown, Jr., Patron*

An Artistic and Scientific Profession

ARCHITECTURE is not only an art, and the long and thorough training necessary for the attainment of even a modest proficiency in its practice classes it not only as an artistic profession but as a scientific profession requiring a breadth of knowledge probably greater than is required in any other profession. The future health and well-being of the Nation is, to a great extent, in the architect's hands. Social progress is his care, and in the public interest, even if not in his own, and the architect in whose hands the remedy lies should be surrounded by an artistic atmosphere which will eventually lead to the progress of art or the evolution of a National style of architecture.—Todd.

An Interesting Analogy of the Human and the Modern Civic Center

By W. J. CUTHBERTSON, formerly City Architect of San Francisco.

THE term "Civic Center," which has lately come quite in vogue, has not yet been satisfactorily definitized and it is questionable whether it can ever be so defined as to cover all its meanings as qualified by its applications.

When applied to a village or small town we readily comprehend its meaning. It is the village green, plaza, or market-place—the cross roads; the "center of circulation"; which latter appears to be its most general definition.

But when we come to a great modern city, the meaning, or at least its application, is not so clear.

In social economy the artificial aggregation of human beings called a "City" is recognized as an organism—the analogue of natural organisms, such as those of all animals.

The habitat of this organism is also called the "City" and answers to the body of the animal, in which dwells its ego, mind, or whatever we may be pleased to call it.

As we find the bodies of animals especially adapted for their occupants and made fit for their uses, so must we do our best to make the Concrete City (the town) adapted to the uses and wants of the Abstract City (the municipality) and we cannot, therefore, do better than to take our lessons from Nature's methods and arrangements, shown in the case of animal organisms and more especially in the highest known work of God on earth, the "human."

In the lowest animal organisms we can easily locate their centers—for example, of an octopus or starfish—in the same way as we can the civic centers of small towns. But immediately we consider animals whose organisms are more highly developed we find one center is not sufficient, and we have complexity in the midst of simplicity, culminating in the most highly developed we know of—the human body.

Here we find several systems—the circulatory system of the life-supporting fluid—the blood—whose center is the heart; the digestive system, which receives and digests the food from which the blood is made, whose center of activities is the stomach; the purificatory system with the lungs as its center; the nervous system, by means of which communication is carried on between the several parts of the body for the purposes of work and pleasure, including its tool—the muscular system; the brain, the center of the intellect; and so on.

The most important of all these is the heart; for without it the body ceases to live and all its other powers are of no avail. Here we find the center of circulation of the blood, which feeds and nourishes all the rest of the body, in the geographical center of that body, for the economy of power in pumping the vitalizing fluid to all parts.

In the analogue of the "City" this heart is the place in which are the activities directing the means by which the general public welfare or commonwealth is attained and in the absence of which the municipality becomes an unorganized anarchism and is practically dead. The place where these activities are housed is the building containing the offices of the municipal government, commonly called the town hall or city hall.

For economy of administration this, therefore, is placed naturally in the center of population, which in a normal city corresponds very closely to the geographical center; like the heart in the human body.

Now then, we have found the place for our City hall; which, being the center from which the public service is directed and flows, is really the CIVIC CENTER, par excellence.

But this is but the principal one of many other centers, for, turning again to our most perfect organism—the human—we find, besides the heart, other centers and systems.

The next important center in the human body after the heart is the stomach: the center of digestion which prepares the food for the making of the sustaining fluid—the blood.

In the city organism this digestive system is represented by the wholesale center, where provisions and goods are received from the outside—answering to the mouth—and by the retail center, whence these goods are distributed to the several points of the corporation by the streets and highways represented by the lymphatic ducts of the body.

It will be noticed that the mouth is away from the central parts of the body and so we find the wholesale district near the wharves and freight depots on the outskirts of the city, while the retail center is found more central, as we find the stomach in the body; so that distribution may be facilitated.

To aerate our worn out venous blood we have in our body the lungs, located in a somewhat central location. This indicates to us that breathing spaces in our cities—the principal parks—must be not exactly in the center, but yet not too far off to prevent the easy access of the citizens from all parts of the town.

Now, turning to the extremities, we find the hands and feet answering to the manufacturing and locomotive centers. These centers are thus indicated as being on the outskirts of the town; where we really find them in our cities.

The brain—the center of the intellect—occupies centrally one end of the body—the brain pan—away from the general activities. This naturally corresponds to the intellectual and scientific center in the city, wherein are placed the Public Library and the Colleges. These, accordingly, should be placed at one end of the city on its center line, furthest away from the business turmoil.

In the body all the senses, except feeling, are grouped around each other and again away from the business part; teaching us that the principal amusement center in the city corporation—containing the music hall, the museum, the botanical garden (in the center like the nose) and the chief restaurants, corresponding to the centers of the senses of hearing, seeing, smelling and tasting, should be so placed in the city. The minor amusement places are scattered throughout the city like the sense of feeling throughout the body.

But this interesting analogy can be continued almost indefinitely; for example, we may imagine the nerves which carry impressions to all parts of the body to be the telephones and other means of communication which connect all parts of a city, and their ganglions the district centers. Enough has been indicated, however, to show the wonderful analogy between the two corporations—the human and the civic.

So let us turn from these theories to their practical application.

Many years ago was read a paper before a scientific body in San Francisco, in which the theoretically perfect city was declared to be on the plan of a combination of the geometric figures, the Star and the Spiral, and in which, from a grand central place or civic center, radiates all main arteries, and from which starts the spiral road which gradually increases

its circuits as it advances to the suburbs; close near the center—the business districts—and expanding more and more in the residential districts.

This seems to be an ideal plan for a city situated in a level or prairie country; but immediately we apply it to any city of another kind of topography it does not work. And there are but few cities with this ideal situation.

For instance, in a city with a broad river flowing through it, the grand center is lost and the embankment of that river becomes the line of the principal buildings; such as London, with all its modern governmental buildings on the river front.

Again, in a hilly city, as it consists of hills and vales it is impossible to make a general center. The lines of travel having to follow the valleys no lines radiating from one center can be made; so the grand idea of circulating boulevards and radiating lines to a common center is knocked out; and the composing elements—the spiral and star—have to be multiplied to one for each valley.

Such a city is San Francisco; and we will take that city as an example for the application of the principles enunciated in this article, because, for one reason, its citizens are now taking peculiar interest in civic center and city hall matters.

In the first part of this article, the principle was laid down that the real civic center was the place of the cityhall; it being the place wherein are the offices which control the city's corporate existence and from which all the corporate activities emanate; in fact its soul and heart; and therefore should as near as possible be placed in the center of population.

Besides that, in a spiritual sense, it forms the outward manifestation of the citizenship or what might be called the Genius of the City and should therefore be the most important and prominent building in the city, and forms its civic center to the exclusion of all others, is not dependent upon any other and should be an expression by itself, better without than with any subsidiary centers around it. It should therefore, outside of its centrality, be put in such a place that there is no mistaking its location. Being, as said before, an expression of the whole civic solidarity, it should dominate all other buildings.

In a river city this is on the river front; in a flat city in the center, with some identification mark in the shape of some high tower, higher than all other buildings are allowed to be; in a hilly city on the highest spot consistent with its getatability and convenience, so that it may be seen from afar and recognized of all. Fortunately, in San Francisco, we have such a spot.

San Francisco is a city quite peculiarly situated; being on a peninsula and having its surface cut up into quite a number of basins or valleys with their surrounding hills. It requires a plan, therefore, "sui generis."

It has, however, one almost level main highway, which cuts about centrally through the city from bay to ocean, with only one barrier, in the shape of the high range of hills forming the backbone of the peninsula; which will finally have to be tunnelled through.

On this centrally located artery (Market street) is naturally located the hub of population, which—when the city is filled out to the ocean beach (as is rapidly being done)—we find to be about the point of intersection of Dolores Boulevard with Market street.

This, happily, also happens to be the highest point on that street, east of Twin Peaks, so that in that point we have the two requirements—

of centrality and prominence—satisfied. This then we may consider as the natural place for the Cityhall and principal Civic Center.

Now, taking a rapid survey of the subsidiary centers:

The locomotive center is found at the Bay extremity of the above mentioned main artery—Market street, as being in about the center of the waterfront, which receives all of the locomotive water and land lines and about which the wholesale district naturally centers.

Forming the carriage way from the wholesale to the retail centers are Market and Mission streets; acting the same part as the esophagus in the human body.

The retail shopping district's natural center—when the city is filled up—would likely be about the junction of the Hayes and Polk street valleys. It is now centered lower down Market street. This is an artificial position caused by the allowance of high buildings, which prevents the growth outwards of buildings and business.

In the midst of this retail shopping center might well be placed the grand place of concourse, the Auditorium. The old Cityhall site seems formed for it.

The park center (the lungs) is naturally located on the top of Twin Peaks. From this extends the sylvan glades of Sutro Forest, which surely must be acquired by the city, connected with Golden Gate Park about the Affiliated Colleges; from Sutro Forest to the west is only a step to the Spring Valley's magnificent territory with its beautiful lakes, soon to be acquired by the city. This makes the most varied and unique chain of civic parks in the world, a breathing place of magnificent distances.

As to the main educational and recreative centers it appears they should be somewhere outside of the business districts.

Following the example of the Greek Academicians some retired grove seems the appropriate place for study—such a place as the Trocadero Gulch for example: while for the general recreative center, the Ocean beach appeals to all lovers of invigorating amusements.

Besides these main educational and recreative centers other smaller ones are needed, so scattered about the city as to be of the most convenience to the several districts.

The hands of the city—the manufacturing centers— are naturally placed on level ground convenient to the locomotive district and away and to the leeward of the residential district. In San Francisco such an ideal location is the land around Mission Creek, which we find so used.

This finishes our cursory survey of the many centers required by a great city and their natural positions and surroundings.

We will conclude with a few remarks on the site selected by the Supervisors of San Francisco for the new Cityhall and on the best way of treating it.

This site is in a valley and therefore the cityhall will lose the identity and prominence due to it unless some special means be adopted to counteract this hiddenness.

The method already referred to as suitable to a flat city, i. e., the carrying up of some high feature sufficient to dominate all other buildings, is not available in this case, as the eminences surrounding the site prevents the effect of such endeavor.

As the site adopted is partially open to Market street, which is the main traveled highway, a method of marking the place, however, is obtained by erecting a tall tower in the center of that street on the axis of the new building and of Eighth street—the street opposite its main

front. To prevent any congestion at this important center a widening out of Market street should be made here in the shape of a circus or crescent, as indicated on the plan.

When one speaks of a center, the most perfect geometrical figure —the circle—immediately suggests itself as the most appropriate periphery; therefore, we cannot do better than enclose our civic center—our municipal temple—with the grand sweep of a circle.

Put a colonade all around this periphery with buildings of uniform height and architecture, the grandest and most worthy setting possible to the material representation of the united citizenship of a great city will be obtained.

* * *

A New Field for Contractors

NEW uses are constantly being discovered for staple articles of trade. The chief uses of dynamite have always been in connection with mining, quarrying and excavating. All general contractors use it to a greater or lesser extent in their construction work.

It has also been successfully used for a number of years in stump and boulder blasting. Recently, however, a large agricultural demand for dynamite has been created by the discovery that it could be economically and advantageously used in ditching, draining, subsoil plowing, tree planting and orchard rejuvenation. Owing to the rapidity with which the interest in the explosive for these purposes has spread among farmers and fruit-growers, manufacturers of dynamite have become convinced that the farmers and orchardists of the country are going to afford them as large or a larger outlet for their wares than all other markets combined.

The only obstacle to the development of a very heavy consumption of dynamite for agricultural purposes is the fear of the farmer and fruit grower of the explosive itself. Manufacturers are able to convince them of the advantages of its use; they are able to show them that it is economical and beneficial in many ways.

Contractors are beginning to appreciate the fact that agricultural blasting is a desirable field for them to enter. Several contracting firms have already established branches to attend to agricultural work which has been offered them, or which they have convinced themselves can be readily obtained by general solicitation. Most of these contractors have had so much work offered them since taking up this proposition that they have been compelled to increase their working forces and even then some of them are several months behind with the contracts that they have accepted.

* * *

Aviation

An architect "who had traveled," gave his client a half-hour dissertation on English, French and Italian architecture, and finally said, "Now, let us go into the cost of your building. Take the excavation——"

"I thought," interrupted the client, "that it was about time you came down to earth."

* * *

Englishman (patronizingly)—"Your school facilities are excellent, I am told."

American (suavely)—"Well, I should say. See the Smithsonian Institution over there? Think of a building like that just to educate the Smiths."

Suggested Monumental Viaduct for 1915 Exposition

By B. P. LEGARÈ, M. Am. Soc. C. E.*

THE object of the scheme suggested—a monumental viaduct, over a mile in length, containing the longest and highest concrete spans the world has ever seen, is to solve the main topographical problem of the Exposition site; that is, to afford a means of swift, sure and direct communication between Lincoln Park and Harbor View. Without some such link, instead of a single, great, united Expositon surpassing all previous efforts of other cities, we will have two isolated Fairs, neither one big enough or impressive enough of itself to rise above mediocrity. For a successful Exposition, the chasm between Lincoln Park and Harbor View must be bridged. To construct a road over such precipitous ground

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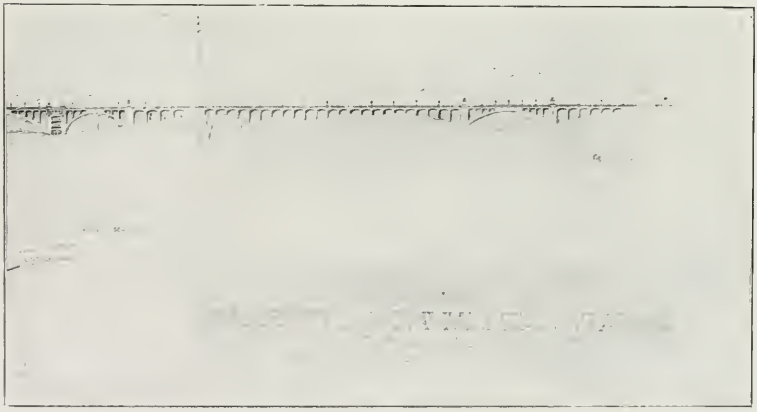


Suggested Monumental Viaduct of

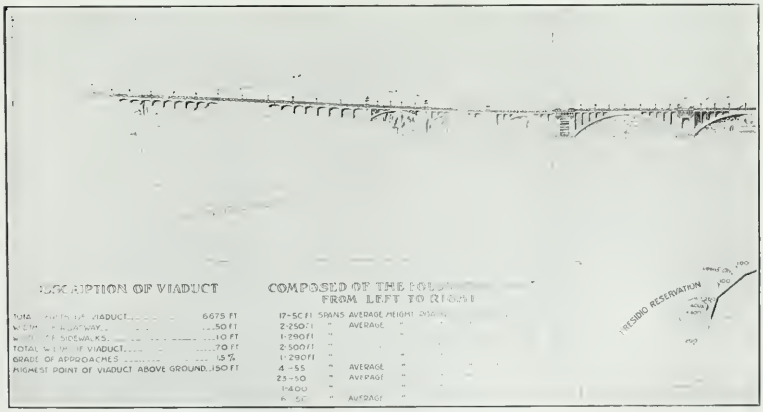
is well nigh impossible and would be at best an expensive and unsatisfactory makeshift. The problem is an heroic one, necessitating heroic treatment. The viaduct herewith suggested would solve the problem in a manner worthy of the Exposition and would be at the same time an everlasting monument to the enterprise and daring of the city that constructed it.

Briefly described, the structure would be as follows:

The total length from the Presidio to Lincoln Park would be 6,675 feet—nearly one and one-quarter miles. It would have a 50-foot roadway with 10-foot sidewalks, making a total width of 70 feet. The approaches would have a grade of 1½ per cent. The highest point of the viaduct would be 150 feet above the ground. It would be designed to carry a double track electric line, to accommodate the intramural railway, which would probably be removed when the Fair was over. Beginning at the Presidio, the structure would consist of 17 fifty-foot spans having an average height of 60 feet; following these would be two 250-foot spans with an average height of 90 feet; next would come one 290-foot span, 110 feet high; this would be followed by two magnificent arches, each 500 feet long by 150 feet high, forming the central motif for the entire structure; having reached this architectural climax, the viaduct would gradually taper down in the following order: one 290-foot span, 120 feet high; four 55-foot spans, 75 feet high; twenty-three 50-foot spans, 70 feet high; then a single arch, second only to the monster central spans in magnitude and beauty, with a clear span of 400 feet and a rise of 110 feet; finally reaching Lincoln Park by means of six 50-foot spans averaging 50 feet above the ground.

From end to end the entire bridge—approaches, arches, abutments—would be concrete, reinforced with steel. It would contain approximately 52,500 cubic yards of concrete and would cost approximately $1,500,000. It would be a bridge without a peer the world over, as permanent as the rocks on which it stood.

The first question to arise is: Can 400-foot and 500-foot spans be built of reinforced concrete? The longest span so far constructed—320 feet—is at Auckland, New Zealand, opened to traffic in April, 1910. If a



Reinforced Concrete for Panama-Pacific Exposition

320-foot span can be erected, a 500-foot span is certainly within the range of possibility. The rapid advances made in the last decade in the art of reinforced concrete construction renders the task simply one of application of principles and methods already thoroughly understood. The marvelous results accomplished with the elaborate plant used in the Canal Zone for the mixing and placing of the concrete for the locks furnishes an excellent example of how cheaply such works can be done when proper attention is given to details.

The most formidable objection is the immense waste involved in the construction and tearing down of a perfect forest of false work. To reduce this cost, steel arches, so designed as to be used later as roof spans for the Exposition buildings could be utilized extensively.

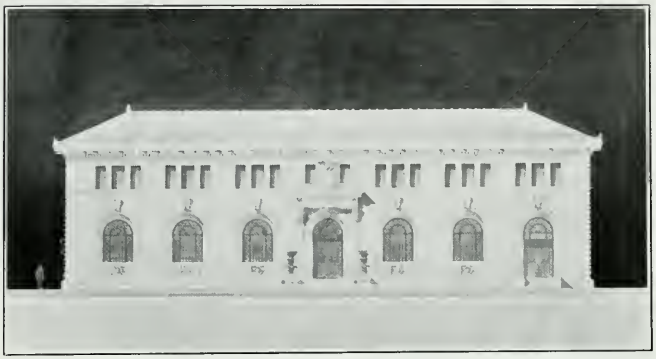
In short, the construction details present no obstacle that cannot easily be surmounted by the brains, skill and daring that in four short years have raised an imperial world city from a bed of ashes.

Finally, the viaduct would be far more than a temporary structure, to be forgotten once the Exposition was over. It would be to San Francisco what the Lake Drive is to Chicago, Fairmont Park to Philadelphia, and Riverside Drive to New York. Combined with the roadways through Lincoln Park, Golden Gate Park and the Presidio, and the Parkways connecting them it would afford a pleasure drive unequalled by any city in the world. Every great American city is spending millions on her park system. San Francisco must not fall behind; by closing the last link in her chain of parks with a monumental viaduct she would simply be doing what she has done so many times before—performed a deed absolutely unique. In short, the question is not so much, "Can San Francisco build it," as "Can she afford to build it?"

* * *

Brick and Tile

A PRELIMINARY statement of the general results of the thirteenth census relative to the establishments engaged in the manufacture of brick and tile has been issued by the Bureau of the Census Department of Commerce and Labor. It covers building, fancy and ornamental brick, vitrified brick, drain tile and any other brickyard product. The general summary shows increases in all the items at the census of 1909, as compared with that of 1904, except in number of establishments, which decreased from 4634 to 4125, or 9 per cent. The capital invested as reported in 1909 was $174,673,000, a gain of $54,716,000, or 46 per cent, over $119,957,000 in 1904. The average capital per establishment was approximately $41,000 in 1909 and $26,000 in 1904. The value of products was $92,776,000 in 1909 and $71,152,000 in 1904, an increase of $21,624,000, or 30 per cent. The average per establishment was approximately $22,000 in 1909 and $15,000 in 1904. The cost of materials used was $23,736,000 in 1909, as against $16,317,000 in 1904, an increase of $7,419,000, or 45 per cent. The value added by manufacturing was $69,040,000 in 1909 and $54,835,000 in 1904, an increase of $14,205,000, or 26 per cent. This item formed 74 per cent of the total value of products in 1909 and 77 per cent in 1904. The miscellaneous expenses amounted to $9,431,000 in 1909 and $6,969,000 in 1904, an increase of $2,462,000, or 35 per cent. The salaries and wages amounted to $42,578,000 in 1909 and $32,176,000 in 1904, an increase of $10,402,000, or 32 per cent. The number of salaried officials and clerks was 4951 in 1909 and 3690 in 1904, an increase of 34 per cent; their salaries increased from $3,530,000 in 1904 to $5,439,000 in 1909, or 54 per cent. The average number of wage earners employed during the year was 76,528 in 1909 and 66,021 in 1904, an increase of 16 per cent; their wages increased from $28,646,000 in 1904 to $37,139,000 in 1909, or 30 per cent.

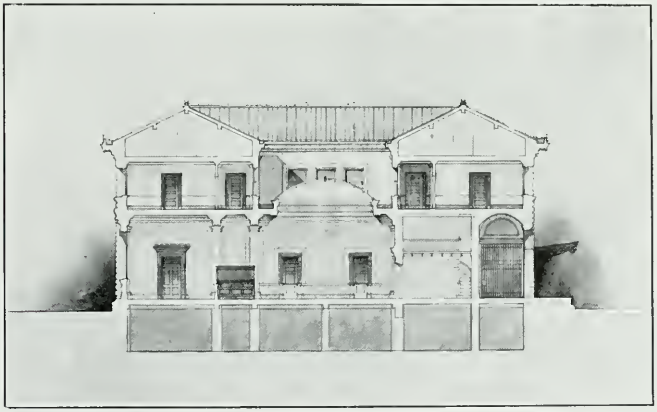


Front Elevation, United States Sub-Treasury, San Francisco
Edward G. Garden, Architect

Mr. Edward G. Garden's Design for the San Francisco Sub-Treasury

CONSIDERABLE local interest is attached to the work of Mr. Edward G. Garden, who recently became identified with the architectural life of San Francisco. Mr. Garden came to California from St. Louis, where he was a prominent member of the American Institute Chapter of that city. At one of the last meetings of San Francisco Chapter he was unanimously admitted to membership.

Mr. Garden's competitive design for the San Francisco Sub-Treasury is shown by two floor plans, section and elevation, and to those who were

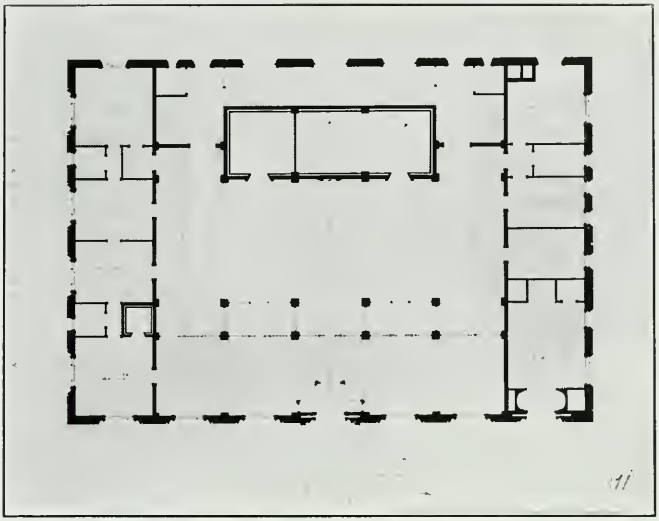


Transverse Section, United States Sub-Treasury, San Francisco
Edward G. Garden, Architect

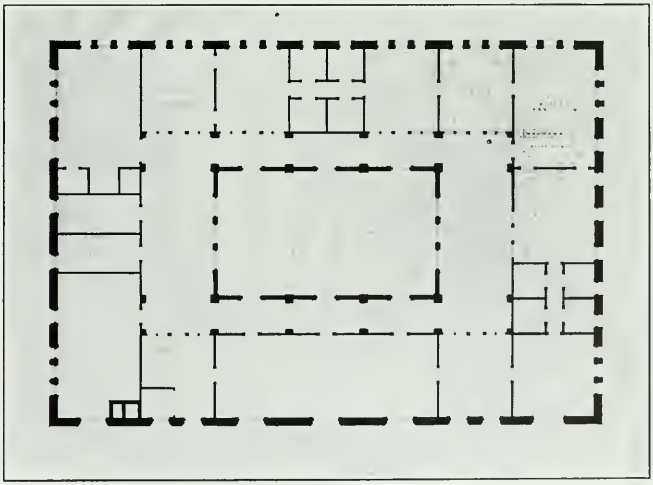
Front Elevation, Hotel for Mr. Murray F. Vandall, San Francisco
Edward G. Garden, Architect

in the competition it will perhaps appear that he laid too much stress upon the second story by recognizing it in the elevation—at least the result of the competition would seem to indicate that such was the case.

Since his arrival on the coast Mr. Garden has not only joined the San Francisco chapter, but he has identified himself with the San Francisco Architectural Club and intends to be active in both organizations. His office in the Phelan building has now under construction a six-story hotel building on California and Webster streets, the elevation of which is published in this issue; a three-story apartment and store building on Ninth street, near Folsom, and in preparation, plans for a residence and also for two other apartment buildings, one in San Francisco and one in Berkeley.



First Floor Plan, United States Sub-Treasury, San Francisco
Edward G. Garden, Architect



Second Floor Plan, United States Sub-Treasury, San Francisco
Edward G. Garden, Architect

Good Gravel Far Better Than Limestone for Concrete Work

THE moral support of the entire sand and gravel interest of the country is due the producers of the Cincinnati district in the situation that confronts them there. The city authorities are opposed to gravel in municipal work, and the gravel men are seeking information that will enable them to show the officials the error of their ways. Appeal was made recently to President Renwick, of the National Association of Sand and Gravel Producers, for information of this kind, and he replied in effect as follows:

"I am enclosing you an extract from the Chicago Council proceedings during the year 1908, at which time we were having the same sort of trouble that you are evidently experiencing. This 1908 controversy, however, was principally in comparison of the relative merits of torpedo sand and limestone screenings. Our fight on gravel really dated back to about 1904. Any engineer who discriminates in favor of crushed limestone over good gravel for use in concrete does it either through ignorance or dishonesty. The United States government has on its staff some of the best and highest priced engineers in the world, and they, without exception, give gravel a preference in their concrete construction.

"This was evidenced in our own district by the fact of their specifying gravel and torpedo sand for construction of the new Naval Training School, thirty miles north of Chicago, and at a point where limestone could be bought cheaper than the gravel. Engineers of the city of Chicago were until a few years ago so partial to the use of limestone that gravel was not permitted in specifications for macadam concrete, sidewalk work, or curb and gutter, but this was undoubtedly due to the fact that the gravel people had not organized their business nor arranged their plants for producing gravel in suitable sizes and quantities, while the stone people were working under one of the best combination organizations in the country.

"Today gravel is not only permitted in all Chicago specifications, but frequently specified to the exclusion of limestone, as in the case of combination of curb and gutter. The same applies in private work, as is evidenced in the erection of many of our largest commercial buildings. The Montgomery-Ward building, in Chicago, which is the largest reinforced concrete building in the city, specified gravel in preference to crushed stone, although stone could have been delivered by boat at a much cheaper rate than the gravel, which necessitated a railroad delivery. The Corn Products Company plant at Argo, Ill., which is probably the largest concrete plant in the state, was also built of gravel concrete, although erected in the stone quarry center of Chicago. The new plants of the American Bridge Company, the American Sheet and Tin Plate Company, and the Pittsburgh Screw and Bolt Company at Gary, Ind., are all constructed of gravel concrete in preference to crushed stone, although stone could be delivered at as low, or a lower price than the gravel. We meet very few up-to-date engineers today who do not admit that they would prefer a concrete built of gravel than of limestone. The reason is obvious, as concrete is no stronger than its weakest part, and we know that a gravel stone is stronger than limestone. No further evidence of this is necessary than the fact that a yard of gravel weighs five hundred pounds more than a yard of crushed stone.

"Years ago we were continually confronted with the argument that cement would not adhere properly to the round or smooth surface of a gravel stone, nor so well as it would to the cubed edge of broken limestone. The fallacy of this argument was soon shown by the blasting of gravel

concrete in which some of the stones were broken in two ways without releasing the cement from the outside edges. Certainly the thin edge of a cube stone is much weaker than the heart of the stone, which is naturally much thicker, and would therefore break easier at this point than at any other. In addition to this the sharp edges of the cube stone not only bridge on themselves, but will do so on the form work, and thus create an unusual amount of voids which are apt to be left unfilled by the finer particles of the concrete, also leaving a rough surface when the forms are removed. Our progressive engineers appreciate all these points, as well as the result of numerous comparative tests which are continuously being made, so that in this locality at least we have nothing to compete with in specifications except price. I believe that if your council is on the square, and your city engineer possessed of the average intelligence, you will have no trouble in getting gravel placed on at least an equal basis with crushed stone for any kind of concrete or macadam work. That has been our experience in Chicago, and, as I said before, the gravel people have done it strictly on the merits of their goods and in the face of a strong organization on the part of the stone people."

* * *

Ancient Architecture

FEW of the remnants of Phoenician architecture which remain today present such objects of interest as the towers or tower pillars erected by the adventurous merchants of Tyre on the coasts of the many lands visited by those hardy mariners.

These towers were frequently circular in form, as were most of the Phoenician architectural works, possibly, it has been suggested, because no shape is more natural or more agreeable to the vision.

That the Phoenician towers possessed a religious significance is shown by the fact that it was usual to place two such erections in front of the principal entrance of a temple. Josephus relates that Solomon, during the building of the temple, employed one Hiram, of Tyre, to erect before the porch of the building two hollow pillars, to which the king gave the names of Jachin and Booz respectively, and which the Jewish historian says were to the height of 18 cubits.

Lucian, in his treatise, "Perites," describes a temple of Atargath as having in front two similar columns, each 30 cubits in height, to the top of which the priests at times ascended to converse with the gods, says the London Globe.

In the early days of the Christian era it was customary to build churches and monasteries upon sites which were once covered by heathen temples, and also in those localities which had been connected with the worship of pagan deities; and it is said that St. Simon Stylites and the Christians of his day endeavored to disconnect the pillar from its heathen associations, and to attribute to it a Christian origin. Frequently pagan temples were taken over by the Christians and all existing mural sculptures and paintings were effaced by plaster or other paintings representing scenes in the life of the founder of the new religion.

The famous round, conical capped towers of Ireland afford striking instances of where a Christian origin is attributed to a style of architecture undoubtedly eastern, and therefore pagan. For, assuming the Irish round towers to be oriental in character, it follows that they must have been erected prior to the introduction of Christianity to these islands. They

are not Roman, since Rome had no settlements in Ireland, if, indeed, the Roman legions ever set foot upon her shores.

If it had been the custom of the primitive western Aryans to build such towers it is but reasonable to suppose that specimens of their handiwork would have remained to us today—scattered over the whole extent of the territories they then occupied. The cylindrical pillar must have been regarded as a religious symbol with some people prior to its appearance in Ireland, and it can scarcely be attributed to any early barbarous inhabitants of the island.

From the point of view of the archaeologist, the tower at Clonmacnois is the most beautiful Irish round tower in existence. At its base is a little church, or oratory. It is built entirely of cut stones, and the roof is made of lozenge shaped stones, fitted so closely and finished so well that time and weather have left it almost as perfect as when completed by its builder.

The round tower of Kildare is another fine example of Cyclopian architecture and is one of the tallest in Ireland, being 130 feet high. A round tower of great antiquity is to be seen in the grounds of Peel castle in the Isle of Man, and is supposed to date back to pre-Christian times.

It is now generally conceded that the Phoenicians penetrated as far west as these islands, and it has also been stated that they colonized along the western coasts of Europe as far as Norway.

* * *

"The Nigger in the Wood Pile"

THE "prepared specification" may be a labor-saver, but the cautious architect should avoid the trap so skillfully set to ensnare him. The manufacturer is not an altruist, and appeals to an architect's indolence instead of to his judgment, in putting into his hands a technically worded and apparently unbiased specification, which, while it seems to stand for quality, really stands for an individual specialty and shuts out competition.

In making up his "specifications," the architect who is often disinclined to give an audience to the conscientious manufacturer who wishes to "explain why" his goods should be used, will include in his specifications a so-called "Standard Form" sent in by a competitor of the other man which, in a majority of cases, is so inspired and biased as to inevitably throw the order into the latter's hands. This applies equally to roofing materials, damp-proofing compounds, patent flues, heating and power plant equipment, etc.

Sometimes the architect is led into serious errors by using these set forms, as in one case where an ice machine was to be installed. The low ceiling of the basement precluded the use of any but horizontal machines, but the architect "dug up" a manufacturer's specification which "sounded right," and used it. Consequently, bids were called for on a vertical machine, the use of which would have involved an entire change of plans and an enormous extra cost for excavations, foundations, etc.

The architect should watch out for these "niggers in the woodpile." There is a whole army of coons hid away in the ordinary architect's vertical files or cabinets, ready to spring out when uncovered.

* * *

"I see you're still in mourning, though your husband has been dead three years."

"Yes; in the first place I can never forget him, and then my fiance likes me better in black."—Fliegende Blatter.

Influence and Ethics of Competitions*

By DONN BARBER, A. A. I. A.

IT must be admitted that the subject of competitions considered in any of its aspects has become a most vexatious problem, and one which, in all probability, will never be solved to the complete satisfaction of the building public or the practicing architect. Competitions in one form or other are as old as the practice of architecture itself, and history teaches us that the resulting heart burnings and disappointments, the strife and argument, the petty jealousies, the very important doubt as to whether after all the best man and the best plan has really won, obtained just as much in the competition for St. Peter's at Rome as it has perhaps in our lesser competitions for a postoffice of negligible importance.

It would be improper and unfair, indeed, to condemn competitions as a whole and indiscriminately, for from some points of view they seem to be a necessary evil. We can, I think, admit that competitions in themselves are not necessarily evil. It is the continual abuse and mismanagement of competitions, the unbusinesslike, undignified, inadvised desperate sort of struggles that ever carries in their train disappointment, prejudice, criticism and hard feelings of many and varied kinds. All this is responsible for a condition that has become a most serious consideration in contemplation of the inter-relation of architects and bearing upon the actual work that we as a profession are doing and standing for. The architectural profession has for years been kept in a state of commotion while the real solution of the difficulty seems as yet unfound. Like all the other great and intricate problems before us today, however, this one must be dealt with directly and calmly and in a manner devoid of all prejudice, and some true solution must be found at any cost.

It seems to have become a very generally accepted and recognized tradition in certain cases, notably where proposed structures of a public or semi-public nature are involved, that architectural competitions still prove to be desirable or necessary as furnishing, perhaps, the best available means for selecting an architect. Just at the present time in this country, however, architectural competitions seem to be declining in popularity. Where only a comparatively few years ago competitions were sufficiently numerous to provide almost continuous employment for some firms who were fortunate enough to acquire the major part of their work in that manner, today we find an immense quantity of important work being given out by direct selection and appointment, and competitions comparatively infrequent. It would be difficult to assign any real reason for the change which seems just now to be taking place. Can it be that the owner is gradually coming to see that competitions are at best very slow, and if properly conducted a most expensive method of choosing an architect; is it possible that the owner realizes that an occasional good preliminary scheme is after all the real limit of the competition method, and that being the case, competitions are in the main of no advantage to him? Does the owner begin to appreciate the extreme difficulty of devising a scheme of competition that will afford him conclusive assurance and evidence of the winner's ability to secure for him the final and practical execution of the design selected, without committing him to unnecessary, if not inordinate, expense?

Notable instances exist where architects who have proven adepts in the preparation of competitive designs, men of extraordinarily developed imagination and possessing marvelous dexterity in draughtsmanship, have

*Paper read before the Forty-fifth Annual Convention of the American Institute of Architects, Washington, D. C.

been awarded the prize and later the work, as a result of competition, and have during the prosecution of the work shown themselves to be devoid of practical experience and even lacking in the ability to discriminate in the selecton of competent assistants or superintendents. The ultimate results in such cases have probably had the very natural effect of somewhat impairing confidence in the competition method of selecting an architect. It is only fair to say, on the other hand, that there also exists many instances where notably satisfactory results have been obtained through the method of competition, but have these not ordinarily followed as a result of choosing the competitors from the ranks of competent and thoroughly experienced practitioners and paying the competitors so selected an adequate or reasonable sum for their sketches. Exceptions to this latter rule might be noted in the cases of government and municipal work, and perhaps, possibly, in some private work of sufficient size and importance to induce the experienced architect to enter an unpaid contest; but even under such circumstances the competitors have usually been limited in number and carefully selected.

It must of necessity be prejudicial to the interests of the owner that any architect should be allowed to enter a competition who cannot in advance establish his ability and competence to properly design and satisfactorily execute the work involved. It is sometimes urged that to open an unlimited competition may disclose some unknown but brilliant designer. This reasoning might be valid if the sole object of a competition were to secure a brilliant set of sketches. But unfortunately sketches in themselves give no real evidence that their author has the technical knowledge or matured ability to fulfill the promise of his sketches through proper and adequate control of the work itself in execution.

The general influence of competitions can for present purposes be broadly divided as regards the influence on the architect. Theory presupposes competitions to be instituted with the sole purpose of advancing the interests of the owner, and practice proves that these interests are best served where a fair, clean cut and equitable agreement has been entered into between the owner and the architect before the competition takes place.

The American Institute of Architects after years of untiring study and labor has finally issued a circular of advice relative to the conduct of architectural competitions, as a statement of the principles which it believes should underlie such agreements. Serious difficulty with the system prescribed, however, has been found in some cases where it has proven inexpedient, not to say impossible, to carry on important competitions along the lines of what is conceded and believed to be the best practice, owing to the general and natural desire on the part of the owner to get free advice in the form of the greatest possible number of competition sketches, and also on account of the surprising willingness on the part of the architect to rush into competitions where no pre-arranged agreement or understanding exists with the owner. The owner often regards what he believes to be the information contained and given in his particular competition, in the light of a consensus of expert opinion on the subject of the problem before him, and therefore is pleased or disappointed as the case may be with what he regards to be the possibilities of his project. On account of the quality and character of the information so given, the real satisfactory solution of the problem is often complicated and confusion rather than lucidity results. We have all seen the results of what have been termed "unregulated scrambles" and how many times this inconsistent, unbusinesslike, undignified and certainly inartistic mode of procedure has carried with it its own disappointments, prejudices and sins.

Why an owner even when he has taste and judgment and is besides a good business man possessing ordinarily sound common sense, continues to persist in this method of obtaining a design for a building, is a question which architects must answer. It is certainly a most discouraging situation, looking at it entirely unselfishly and from a directly professional standpoint.

The short-sighted, unbusiness-like practice of the seeking out of a client and the offering to him of preliminary services on approval and gratuitously whether in competition or in the hope of finally being awarded the work, has to a great degree in the past lowered the dignity of the profession as a whole and resulted in the cheapening of the architects' services in the mind of the building public. The average owner seems to attach no particular value to architects' sketches either as meaning or standing for more than he himself can see in them, or as representing anything like the cost and labor involved in their production.

Architects are not paid enough for the work they actually do to be able to afford to waste their earnings on the whims and fancies of an owner who is willing to take without compensation from them, in one form or another, professional advice which may be the result of years of technical preparation and experience. The public should be made to feel that he who bears the title of architect has the knowledge and ability needed for the proper invention, illustration and supervision of all building operations which may be intrusted to him and that his services when desired or sought, are entitled to commensurate remuneration. An architect should have a better standing in the community; he should be more prominent before the public and its public enterprises, in the courts and in all matters of good and helpful citizenship. To just how much of the lack of all this can we trace the influence and practice of unlimited and irregular competitions obtaining throughout the past is a question well worth considering.

The influence of competitions on the architect, aside from the undoubted educational advantage which they have furnished at unjustifiable and exorbitant expense to the profession, has been to create unreasonable jealousy and unfair prejudice, misunderstandings, disappointments and in many cases undeserved criticism. It must be remembered in competitions that the resulting joy, if there is any, is of necessity confined to the winner. While the burden of disappointment is left to be shared by all the others who have competed through labor and expense. It has been proven over and over again, as an economic argument in the case of competitions for smaller buildings, that the unsuccessful competitors have often expended collectively in the cost of preparing competitive designs, a sum equal to, if not exceeding, the gross fee that the successful architect has finally received for his complete services rendered in connection with the execution of the work involved. This is, of course, a serious situation for the profession and one which thus far has not been properly met or handled. It cannot be justified either as a good public policy, or a sound professional policy. The query is how long can the profession be expected to afford to continue the practice.

The ethics of competitions would seem to be inseparable from the ethics obtaining in general practice of architecture. The written circular of advice relative to the principles of professional practice, the canons of ethics and the conduct of competitions as prepared and circulated by the American Institute of Architects, form a very complete and helpful basis for the avoidance of the usual pitfalls and temptations due to an over anxiety to get work at any cost.

The application of decent methods in practice rests entirely with the individual practicing architect who, armed with these traditional principles and possessing a broad and comprehensive vision, not to speak of a healthy and sincere desire to apply in addition to all this the golden rule to all of his dealings, must look unselfishly at the part he must play as a unit force in the great work of the present, in order that his architectural progeny may occupy that undisputed place in the affairs of the world that should rightly be given to those who (we at least believe) represent the greatest of all constructive professions.

The American architect of the future must of necessity become less of a creative artist, and more of a trained manager of building enterprise. The ever-increasing pressure for speedy and adequate execution will preclude more and more exhaustive study and tentative experimentation. It will become the duty of the architect to surround himself by specialists in design, in construction, in superintendence, in technical research and engineering; men representing every department of architectural practice, and possessing a knowledge in their individual capacity, perhaps, far beyond his own. The architect himself must remain, however, the master mind that organizes and directs those who strive for the common cause of the work involved and for the office. He will deserve to exercise a greater moral influence in public affairs than heretofore for the scope of his organized efforts will be nation wide, and his authority will be that of a broadly trained executive of varied experience, which coupled with a high sense of duty should make him a generous and true friend of public spirit and the eternal fitness of things.

* * *

About the Filing of Liens

JAMES E. O'KEEFE, a San Diego attorney, furnishes answers to two important queries bearing on the new California lien law. The questions and answers follow:

When should lien be filed for labor on building or for materials furnished?

The original contractor has 60 days after the completion of his contract to file lien for money due him under his contract. Persons other than the original contractor have 30 days after he has ceased to labor or has ceased to furnish materials or both, or at his option within 30 days after the completion of the original contract, if any, under which he was employed.

In case the owner, however, fails to file a notice of completion within 10 days after the completion of any contract for the construction, alteration or repair of the building, claimants in such a case would have 90 days after the completion of the building, improvement, alteration or repair of any structure to file their lien.

When should a lien be filed where work has stopped on a building?

Not sooner than 30 days, nor more than 60 days after cessation from labor thereon. Providing, however, notice of such cessation of work on said building has been filed within 40 days after such cessation from labor. If no notice of cessation of labor has been filed by the owner, it seems that a lien may be filed at any time after the expiration of 30 days from the date that work ceased on said building, and within 90 days thereafter.

Where payment for labor rendered or material furnished is doubtful, it is my opinion that it would be safer for the laborer or materialman to file his lien within 30 days after he has ceased to labor, or ceased to furnish materials, and not to wait until after the completion of the original contract under which he was employed.

Can You Answer These Questions?

(A young San Francisco draughtsman writes The Architect and Engineer an interesting letter, in which he suggests the inauguration of a "Baby Department," same to be devoted to queries and answers—the former to be propounded by draughtsmen and the less experienced members of the profession; the latter to be solved by the veterans who have "been through the mill," and whose general knowledge of things architectural must necessarily be of inestimable value to the ambitious beginner. While The Architect and Engineer is not at this time ready to establish a permanent "Junior Department," still it is pleased to publish any legitimate query from old or young, and in giving publicity to the following letter, invites answers to the several timely questions contained therein, these answers to be published with the author's name, or nom de plume, as he wishes, in a future number.—Editor.)

San Francisco, Calif., Feb. 2, 1912.

Dear Architect and Engineer:

For a long time I have been hoping to see you start a new department in your very up-to-date magazine.

Since talking this over with other youngsters in architect's offices, I have concluded to write you. We want a "Baby Department," where we draughtsmen can ask a lot of questions and have some of the knowing ones answer them. Do get some of the city or government architects and other authorities, who are posted in a practical—in an all around way—to give us every month the best local methods of doing things we are wanting to know from the architect's standpoint. It will save us guessing occasionally, and will be most interesting to a lot of us youngsters (and maybe some of the oldsters) who don't know it all yet.

Again, different concerns (many of them eastern concerns) are constantly sending out literature to us and creating false impressions in favor of their lines, when other products (many of them local products) may do as well or better.

It seems to me an unbiased department, with a careful editor, would be helpful all around. Should we not favor home industry—other things being equal?

Let me submit a few sample questions, to start the ball rolling, which I would like answered. Yours for a progressive publication,

A DRAUGHTSMAN.

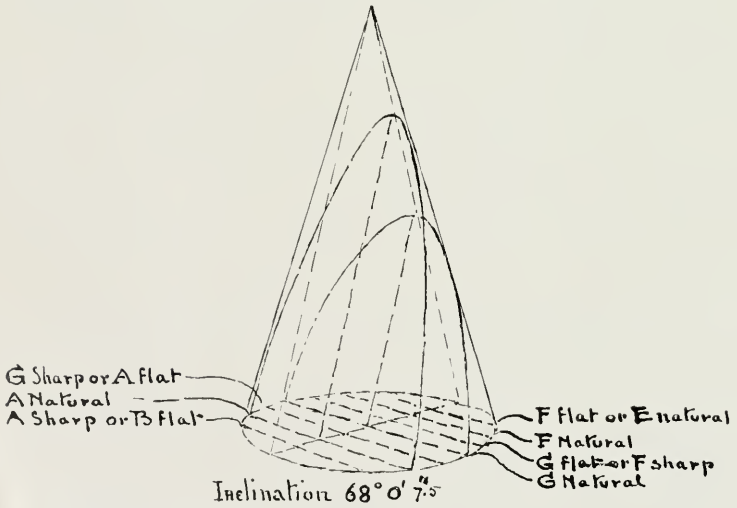
Questions I Would Like Answered

1. Of what is plate-glass composed, and the proportions?
2. Concrete cellar floor is 7 feet underground on hillside: brick walls are thoroughly asphalted outside, yet are still too damp for servant. Please advise.
3. What formula makes the best whitewash for basement concrete?
4. Is red lead as well suited for painting iron and steel work as other materials?
5. What is the tensile strength of hardwall plaster mixed according to manufacturers' specifications for applying to wall?
6. Give a good and inexpensive method for repairing concrete walks without renewing entirely?
7. Leaks continue in reinforced concrete building, flat roof, covered with five-ply felt. Advise me?
8. What is known as a French arch?
9. What tests apply to determine if concrete is damaged by freezing?
10. What marble is most suited for exterior use on the shady side of street?
11. Does the U. S. reject certain brands of local cement?
12. What is the formula for cast-iron cement for filling sand pitting and leaks in castings under water pressure?
13. What are foots in linseed oil?
14. Is diagonal bond a good one for securing facing brick?
15. What is a reasonable charge for binding last year's Architect and Engineer?

Acoustics in Architecture An Exact Science

By ALEX. F. OAKEY, Architect, Second Paper.

REFERRING to the article under this title in the January number of this magazine, perhaps some matters involved should have been more explicitly stated. Each consideration could well be made the subject of a separate article without exhausting the discussion, which requires copious illustration and could be properly presented only in a large volume that would serve as a text-book for reference. However, in the January contribution the sectional sketch was intended to illustrate the extreme precautions necessary for audiences of more than six thousand; for smaller auditoriums we are not obliged to dispense with the more conventional interior, as to general form, though the parabolic cup form for the ground plan is imperative in every case, except as was stated for very small halls with a seating capacity of some three or four hundred. It is this parabolic curvature question in section that was not sufficiently explained. The reasons for its employment are many: the compressions and expansions constituting sonorous tremors are spheroidal in form and the whole body of air affected by sonorous tremors is spheriodal in form, and of parabolic curvature. It will be appreciated that a vibrating body of air imperfectly fills a cubical space; whether it does or not at the ceiling where there are no ears to be considered is of little or no consequence, but on the floor we must accommodate ourselves to the fact. It will also be appreciated that this spheroidal form is in harmonic proportion and that its length, width and depth are commensurate with the resistance of the air body in each direction, hence the necessity of harmonic proportions with any determined unit of measurement. That this proportion should determine the nature of the curves employed is only crystalizing as it were the form of the sonorously tremulous body of air. Therefore any harmonic proportion, as 1:2:3 or



2:3:5 suggests, as was said in January, a consonant chord; because the pitch of tones is determined by their number of vibrations in any given time, and tones that bear such simple ratios are harmonic up to seven; beyond seven we have dissonance or noise. A string that in vibration sounds any note of the scale describes a parabolic spindle. The lower the tone the slower the vibration and the larger the minor axis of the spindle. Exhaustive experiment has proved that for all practical purposes a scale of three octaves from the G natural below the stave upward provides all the tones necessary under varying conditions, and it must be remembered that the larger the capacity of an auditorium the higher the octave selected, because the higher tones are more intense and are longer sustained. The strings used to discover our curves are violin strings, because with the four tuned in fifths we not only cover the whole scale but realize much greater accuracy than with piano strings,—for instance, on the piano A sharp and B flat are the same note, but any violinist will testify that they are not. It requires oriental scales to give all possible intervals. However, in order to get at our curves for practical use it has been necessary to project the conic sections that describe them, and we find that our three octaves are represented with sufficient accuracy by seven cones varying in inclination from 48 degree to 68 degrees; each cone providing three whole tones with their sharps and flats. The accompanying illustration indicates the method. It is the curve described by the lowest of the three tones selected that determines the floor section—the curve described by the highest tone for the ceiling section, and the curve described by the medium tone for the plan form of the wall opposite the stage or rostrum, as also of the vertical wall section throughout, if we are very nicely discriminating. To anyone who has studied the physiology of the ear, and has learned the facts as to the physics of air bodies no apologies are necessary for seeming hair splitting. The danger is always that nothing we can do will prove sufficiently delicate to make us sensible to the finer modulations of tone, and sufficiently alive in our nervous system to the fainter pulsations of wave upon wave of sonorous tremors—often caused by so slight a disturbance that it would be perceived only by the action of a small spirit flame in close proximity. Reverting to the curves it may be interesting to state that in order to discover the required conic sections cards were covered with velvety carbon from a wax taper and moved against the vibrating strings which dusted off the carbon, thus describing the spindles; these were photographed, enlarged, and by simple mathematical formulae reduced to the terms of the conic sections. The cones were then accurately turned by a lathe that discriminates to less than an hundredth of an inch, and while in comparison to the structure of the human ear our curves are not absolutely true, they are sufficiently so for practical purposes, and a collection of seven cones accurately sliced as we might say, enables a draughtsman to use them as templets which he can enlarge to any desired scale by ordinates. A collection of casts of mouth cavities of different qualities of voice is also a very useful and suggestive aid in deciding troublesome and conflicting considerations. These will be found to corroborate much that has been asserted; but the designer will find few studies more illuminating in this connection than that of the structure and proportionate qualities of good violins. In short, the possible and profitable digressions from the main question are infinite and no equipment in paraphernalia or memorizing of rules and formulae can entirely compensate for lack of intuitive perception in deciding the relative importance of the various considerations. To "the man who hath no music in himself, nor is not moved by concord of sweet sounds," these arguments are not addressed.

World's Fair Architectural Scheme Taking Shape

AFTER many days of discussion and a thorough analysis of the problems before them, Messrs. Willis Polk, Clarence R. Ward, W. B. Faville, Henry Bacon, Thos. Hastings, W. C. Richardson (representing the firm of McKim, Mead & White), Robert Farquhar of Los Angeles, and L. C. Mullgardt, and Geo. W. Kelham of San Francisco, members of the Architectural Commission of the Panama-Pacific International Exposition, have decided on a final plan for the 1915 World's Fair.

This general plan calls for an esplanade on the waterfront; a great avenue and garden parallel with Chestnut street; a main court of honor, running north and south and facing the water, with a dome at the southern end of it, and a series of interior courts. The main feature of the plan will be an interior court, and its treatment will be of the most unique character. The courts will represent the continents of the earth. It is planned to have the court of honor, which forms the center of the group, commemorative of America. In the center of each court, it is planned to erect a statue or monument commemorative of the particular continent represented.

Before leaving for the East, the eminent architects, Messrs. Hastings, Bacon, and Richardson, expressed their hearty approval of the site selected by the Exposition officials. Mr. Henry Bacon declared the site was the most beautiful that he could conceive for an Exposition. He further stated that the courts had been so arranged that the sun would pour into them all day long, and the winds that blow from the Bay would be eliminated. He also stated that the plan for the Exposition was so far advanced that no difficulty is anticipated in arranging the designs of the individual members of the commission, and the buildings will be in harmony with the general scheme of architecture.

"To my mind," said Hastings, "there never has been an aggregation of people more interested in an Exposition than I have met in San Francisco, and they have gone about planning this great project in such a liberal and fine way that it is evident every one is seeking the best results and is working unselfishly to that end.

"The object of the Panama-Pacific International Exposition is more uplifting than other expositions, because San Francisco's Exposition is commemorative of the living work of men of our own time, whereas previous expositions have been commemorative of things accomplished by men hundreds of years before.

"The plan selected for the Exposition is the combined work of the architectural commission and lends itself to a treatment which is quite different from any exposition that has ever before been built."

Robert Farquhar of Los Angeles said: "The plan selected is wonderful, and is going to give every chance for the individual architect to work out his own personal ideas, all of which will be in harmony with the original plan.

"I feel deeply appreciative of being selected as a member of the architectural council and to have the opportunity to assist in planning this Exposition with gentlemen who stand so high in my profession. I also believe that a very great courtesy has been shown the south in naming me as one of those to participate in the building of this great undertaking."

Clarence R. Ward expressed himself as follows in speaking of the adoption of the final plans:

"The broad and earnest way in which the Architectural Commission attacked the intricate problems of site, plan, and distribution of the various component elements was inspiring. It is a source of gratification

and pride to the local contingent that the results of our labor during the past month meet with the approval of our distinguished confrères of the South and East."

The architects are expected to return here either the latter part of June or July for further conference. It is expected that their plans for the various buildings will be ready for submission at about that time.

Robert Farquhar of Los Angeles, the new member of the advisory architectural council, was born in New York in 1872, and is a graduate of Harvard University, the Massachusetts Institute of Technology, and l'Ecole des Beaux Arts of Paris. His principal work has been in Southern California, where he has been for the last few years.

Arthur Brown, Jr., of the firm of Bakewell & Brown, San Francisco architects, who has been selected to design one of the buildings for the Exposition, is a graduate of the University of California and also a graduate of l'Ecole des Beaux Arts, 1901. He designed the Berkeley city hall, Burlingame club, the City of Paris building and other important structures.

The selection of John McLaren to look after the landscape effects of the Exposition has been commended by all classes of people. The marvelous results accomplished by the well-known superintendent of Golden Gate Park is ample evidence that he is the man for the great work of beautifying the Exposition.

* * *

The Concrete Life.

(Thomas A. Edison says the furniture in the concrete house of the future will likewise be of concrete.—News Item.)

At Jones' concrete bungalow
Brown rang the concrete bell;
('Twas in the newest concrete row,
In neighborhood quite swell.)
On concrete rack he hung his lid,
And in a concrete chair
He sat, while Jones' youngest kid
Dashed up the concrete stair
And told his pa Brown had arrived,
Whereon from concrete bed
For concrete hair brush Jonesy dived
And brushed his Sunday head.
And Brown's foot tapped the concrete floor—
He studied concrete art
In concrete frames, while more and more
He felt impatience start.
The concrete clock upon the wall
Ticked its concretest tones,
But, echoing through the concrete hall,
Came not his good host, Jones.
The leaves of concrete books Brown turned,
He hummed a concrete tune,
And for a concrete meal he yearned—
'Twould be a concrete boon.
At last they came, with sweetest looks;
Delay in coming down
Was caused by busted concrete hook
In Madame's concrete gown! —Denver Republican.

Architectural Sketching in Pen and Ink

By P. M. STRATTON, in the London Building News.

HOW happy is the architect who, in the sunny season of the year, can cease his struggles to fit the column to the entablature, the window to the facade, who, for a couple of weeks, can leave the scene where the stubborn materials are being bonded, tenoned, doweled, and cramped together, and who can, for the time, enjoy a new art and a new medium. For an artist without an art is like a man without a home. Having flitted from the house of architecture, leaving, we hope, injunctions that no letters are to be forwarded, it is yet necessary to find some other abode for the mind, where a perfect rest and holiday can be achieved. There are innumerable reasons why music or poetry or painting should be the architect's pursuit; but here are a few suggestions why he should occupy his time with pen, ink, and a few sheets of white paper.

The pen bears to the artist the same relation as the chisel to the carver or stonecutter. Both tools give that quick, incisive stroke; both leave that dark shadow with firm edge to it; both do work that in being creative is also destructive, for none can replace the chips of wood or stone rent from the block, and none can restore the first surface of the paper, once stained with ink. Both architecture and pen drawing need the boldness as of a man burning his ships, for in both there is no evasion of the result, no washing out, no superlaying of the right color to hide the wrong. Moreover, those clean-cut, decisive lines so characteristic of pen-and-ink draughtsmanship are also the mark of the best architecture of our country. The steeples of Wren are like black and white drawings by some gigantic artist on the page of the sky and the mediaevals have bounded their buildings by the lines of their buttresses, and defined every arch by the sweep of a hood-mould. In a word, the realization of shadows and the formation of outline are the first principles of either art. Undoubtedly, the medium of pen and ink is felt to be lacking, owing to its inability to express color, of which it can generally give same slight indication of tone, and nothing more. The result of sketching a landscape, where all is defined by color rather than by shadow, and is rich with a thousand hues, is of so gloomy a nature as to deter the artist from often renewing the experiment. Color decoration on the side of a church or of a mountain is best left to the color artist.

On the other hand, the absence of color renders pen-and-ink drawing almost as conventional an art as architecture, and occasions it to be chiefly indebted to composition for effect. Good arrangement will redeem the scratchiest line and the most flagrant violations of perspective, just as if, for instance, the columns and balusters of the Whitehall Banqueting House were turned topsy-turvy, and other eccentric and coarse methods of detail introduced; still, the effect from a distance would be what it is now. With certain pleasing alternations of light and shade, and certain happy varieties of tone, a sketch will gratify the eye far more than if the technique were perfect, but the general grouping meaningless or harsh. Composition of form should be placed before everything, for no pretty combinations of color can be introduced to supply the want. An excitement is added to pen drawing by the fact of its being an art which is still in its youth, so far as mere years go. Mr. Pennell has registered the exact date of its birth in his book on "Pen Drawing and Pen Draughtsmen." It is more than a living art; it is a lively art, like architecture at the Renaissance. At any moment some fresh advance may be made; some one may light on an unknown sphere, and plant the flag of his personality.

As regards practice and technique, it is always well to insure having

the best materials. The most suitable pen to commence experience with is fairly hard, not flexible or scratchy, or inclined to tear up the surface of the paper, and it produces rather a broad line. The nibs, with a ball point, similar to the Waverly nib, are of this kind, and produce a uniform line, which is well suited to drawing architecture. The flexible nibs of Gillot need a great amount of experience before they can be used successfully, as the slightest change of pressure makes a considerable variation of thickness in the line. They are, however, invaluable for indicating the texture of foliage. Any smooth paper, such as Whatman's hot-pressed or Bristol board, is suitable for general work, while with a slightly rough surface a warm and sunny effect, as of vibrating heat, can be obtained. A slight tone to the paper often pulls a drawing together, and gives the effect of sky without the necessity of putting it in, for which the draughtsman should be thankful. There is no doubt, however, that the crispest and cleanest looking drawings can be made on the smoothest and whitest paper. The ink, again, should be the best—a pure black, unshiny liquid, such as Higgins' American.

For drawing in the subject an HB or F is the best pencil, and on rough paper an H may be used; but all should have sharp points. The penciling should be very light, and not extend beyond outlines. If there be any doubt of the right mode of treating the subject, a piece of tracing paper may be slipped over the pencil drawing, and the sketch be roughly filled in with BB pencil or charcoal. Suitable values are thus very quickly ascertained, and any alteration which would improve the outline or skyline is remarked before it is too late. This procedure will also show the line at which to cut off the foreground. Neither is this a waste of time, for the arranging of the sketch is often, to an architect, the most enjoyable part of it, while it saves hours of work in the end. If through rain, or other cause, it is impossible to finish in ink on the spot, the rough pencil or charcoal impression can be traced at home, but this should not be indulged in as a general practice, or a loss of conviction and reality will soon be apparent in all work done under such conditions. It is understood, on good authority, that a certain well-known artist makes this procedure his rule, with undoubtedly satisfactory results; but he is a genius, and can do what he likes.

It is necessary now to decide which part of the picture shall draw the eye to it, shall be the center, the raison d'être of the rest, and shall "make the hole in the paper." To this important part, all else must be subsidiary; to it every light must lower its intensity, every shadow must be its foil. It must be the juxtaposition of the deepest shadow and the brightest light. Yet always the art is to conceal art, and that picture is the best which has a spontaneous simplicity defying analysis. This center of the composition is best put in first, so that all the rest can play up to it; the main shadows next, and then the intermediate grey tones, which should be few and broad.

Technique comes next in importance to arrangement of values and formation of outline. Up to a certain point, this is a matter of practice and of learning from the drawings of acknowledged masters what lines are pleasing in themselves, or combine well with others. It is necessary to take endless pains, and spend many laborious hours in drawing lines parallel to one another and equidistant. The ability to lay on a series of lines so as to produce any desired tone is the sine quâ non of the technique of the art, as on it depends breadth of effect and that appearance of mastery of one's medium which distinguishes the artist from the amateur. The faculty of shading evenly once acquired, it is all the more enjoyable in the end to break up those broad shadows with diffused reflected light, or with tiny holes of black, to show jointing and texture.

Planning the Small House

"IT IS not given to many of us to design cathedrals, public buildings, skyscrapers or hotels," said a local architect the other day, "and perhaps it is just as well that it is not. The great range of the most of us in the profession is the construction of the private home, the small house perhaps. That does not mean that originality, ambition and even genius may not be exercised, however, on the work. It certainly does mean that in the aggregate it is left to us home builders to mar or make the beauty not only of an individual dwelling but in the aggregate of an entire town or city. It is the multitude of homes that after all make up our American urban life. No architect need feel discouraged because his clients are the home makers of his city and not the bank or postoffice builders. It is the home maker, after all, that counts, and the small house planner of today may still become the cathedral designer of tomorrow."

It is to these small house builders that most of us go for our first aids in architecture. Most of us begin with the home when we begin to build at all, and it is on the subject of planning the small house that so notable an architectural authority as the London Building News addresses itself when it says:

"The two first considerations which confront an architect when a client desires him to prepare plans for a house, are the peculiarities of the site and the circumstances of the family which is to be provided for. A town house necessarily differs from a country house, for a town house is generally one of a row, or at best, but semi-detached, and the area of land is limited and the aspects beyond possibility of altering. All that can be done is to arrange the required number of rooms as conveniently and as economically as possible on the space which at disposal, while reasonably providing for external and internal architectural effects. In the case of a suburban or country house, the architect can often do a great deal more than this. More likely than not he can to a great extent select the exact position on the site which the house shall occupy.

"Anyhow, it is always worth while to spend time personally on the ground, and to try to recognize its possibilities, which are not always obvious at first sight, particularly upon a dull day, when a little carelessness may lead to neglect to ascertain the points of the compass, with the result that the larder may eventually be built to face due south, and the drawing-room, with a veranda before its window, to front to the north. It may be said that nobody with common sense could make such mistakes as these; but, unfortunately, they are made, and too frequently!

"The prospects of views from the different rooms are almost important, and so is the proper shelter of the house from inclement or prevalent winds, by either placing it on the southern side of a slight hill, or arranging for trees to be planted on the north and east. Such a slope is further advantageous in providing good views at least over the garden, if not over the surrounding country. These are not always easy to pick out, particularly when considering the upper floor, for the architect does forget sometimes that he himself is standing on the ground when he makes his inspection, and thinks his view will be limited by the surrounding hedges, when the fact is quite different so far as the bedrooms are concerned.

"Some architects, moreover, never seem to contemplate the possibility of the bedroom being used constantly; yet we all know that illness comes to every house sooner or later, so that in course of time it is almost certain

that one room at least will have to be provided for the sick, the convalescent, and the aged. If it can be arranged that such a room can be easily isolated, by means of a curtain saturated with carbolic acid, from the rest of the house, so much the better, as it then becomes the infirmary, when infectious diseases have to be combated. An isolated room, however, is just as useful in the ordinary course as any other. It may well serve, for instance, as a day nursery, for the isolating passage, with its open window, even without the screen, is very effective in preventing the noise of romping children from being heard everywhere else.

"There are other points, the remembrance or neglect of which makes all the difference between comfort and discomfort. Probably we have all of us come across a plan which looks excellent on paper, but works out badly in practice, owing to the roof being squeezed down low so that its slope forms the ceiling of the bedrooms, with the result that the really available floor space is much less than is indicated on the plan. The result probably is that a room which ought to accommodate two beds will only provide space for one, and that in the center, while valley rafters will occur at awkward places over the inmates' heads, where provision is made for a dormer window.

"But probably the most common fault of all in quite small houses is the attempt to economize too much in the staircase, making it narrow, and providing it with winder, even perhaps to the extent of doubling it upon itself. Awkward at all times, winders are particularly dangerous to children and old people, and they render the carrying of furniture up and down stairs extremely difficult.

"All these may, perhaps, be called negative points in house planning, like the dont's of our childhood, which ought to be instilled into every architectural student in the early days of his career; and to them it may very well be added that a long passage without windows is unhealthy, and that even one with a window at its end is to be avoided. Almost equally obvious is the inadvisability of so arranging matters that the servants have to cross a hall which may be used for sitting purposes, in order to reach either the front door or the staircase.

"This brings us to positive rather than negative considerations. In English homes of the present day it is generally desirable to make every house of a dual description, so as to provide within reasonable limits for the segregation of the servants' quarters from that part which is used by the family. All of us who have delved into the realms of architectural history know that this segregation has been a matter of evolution; that a few hundred years ago, even in the castles of the wealthy, all lived together, and how gradually the idea of separation has permeated all classes, until it is accepted now as a matter of course, even in the case of a small flat where a single servant is employed.

"In the larger middle-class houses, the idea is carried farther than in the smaller ones, there being frequently, in point of fact, three houses under one roof, each with distinct day and sleeping-rooms, one of these houses being devoted to the adults of the family, another to the children, and the third to the servants, who, in some cases, are further divided again, particularly in town houses, where the men will sleep in the basement and the women in the attics. In the ordinary small middle-class house it is usual to separate the kitchens, which form the day-rooms of the servants, from the living-rooms of the family only just sufficiently to

prevent the smell of the cooking from permeating the rest of the house, while permitting the servants to reach the various sitting-rooms, and also the front door, without traversing any great distance. If there is only one staircase, it is generally impossible to carry this idea of separation to the bedrooms; but if back stairs be provided, it certainly adds to the comfort of the house to make such an arrangement, when the nurseries, if there be such, are located in the servants' wing. Where the house is large enough, it is always a gain to provide a separate bathroom for servants' use.

"Besides these general considerations, every separate room requires careful planning, keeping its purpose in view, and the requirements of the people who will occupy it, and providing space for all necessary furniture. It is, unfortunately, somewhat the habit at the present time to unduly cramp the kitchen and the coal store, while providing a pretty looking hall, which serves no useful purpose. If a hall is really likely to be used, it must be large enough, and sufficiently protected against draught from the front door and staircase to allow of afternoon tea being served there, and of ladies working and reading there in good light. If this can not be done it is better to sacrifice the hall and add the space to the dining-room, with English habit converts into the ordinary living-room of the family, taking care, again, however, that there is good light for a worker or reader near the fireplace, and that this is not so placed as to bake the backbone of somebody sitting at the dining-table.

"Then, in the drawing-room, it needs some little thought to really arrange the fire and the windows and the doors, and to provide good light to the piano, out of draught, and where the heat will be equable; and the planning may even depend, to some extent, on the possession by the client of a grand or a cottage piano! So we might go on, taking room by room, and showing what ought to be provided, and what it is necessary to avoid; but as each problem is different from all others, so must every architect find his own solution to the particular difficulties with which he is confronted. It is in this that the art of planning lies, provided, as we said at the outset, that good architectural treatment is secured both externally and internally."

* * *

Canonized Concrete

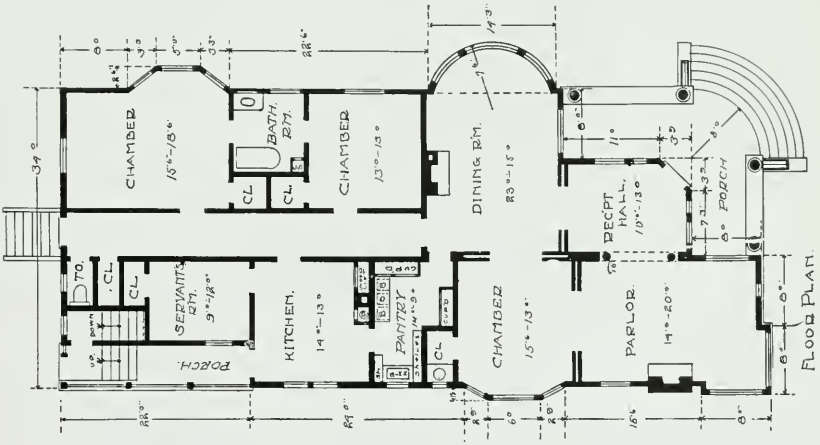
Concrete is objected to at Zion City, Illinois, because Christ never walked upon the material. Professor Meany, University of Washington, says there are specimens of concrete and cement in the British Museum taken from work executed before Christ. That Christ walked on concrete is cited the fact that the floors of the temple in Jerusalem were probably mosaic and stone set in cement. The great aqueduct which brings water to Jerusalem is of cement, and was built in the early Roman days before Christ.

* * *

"Dog-gone It!"

A San Diego architect showed a caller various designs for moderate priced cottages. None seemed to suit, and finally the would-be client exclaimed, "Show me a house which you can build for $500!"

"I am sorry," replied the architect, in a tone of veiled sarcasm, "but all my Peter Pan designs are out."



Bungalow and Floor Plan of Mr. Harry Bercovich, San Jose, California
Wolfe & McKenzie, Architects

THE HANEY FIRE FIGHTING ELEVATOR
DESIGNED IN OFFICE OF
CHAS H YOUNG
STOCKTON CALIF

A Fire-Fighting Elevator for Tall Buildings

By CHAS. H. YOUNG, C. E., Stockton, California.

THERE is a lot of fire-fighting apparatus on the market which undoubtedly satisfactorily answers the purposes for which it is intended. I refer to water towers, scaling ladders, etc. Seeing the possibilities of still further advancement in this particular field, Mr. Edward H. Haney of Stockton conceived the idea of making an elevator cage that could be raised and lowered on the outside of a high building at the will of an operator in the cage, the fastest speed being 150 feet per minute; the slowest, 25 feet per minute. The cage is intended for the exclusive use of firemen in reaching any floor desired in the quickest possible time.

The cage not only elevates, but is equipped with a trolley and trolley drive, which is under direct control of the operator, who simply throws the friction drive lever in gear to travel in one direction, and the reverse for opposite direction, being in a neutral position when the cage is not traveling in a horizontal direction. This reaches the windows on all floors. The lowering of the cage is controlled by a band brake fitted with V-shaped maple blocks which increases the area between the friction surfaces, and places the cage under control of the operator in lowering and stopping. In case of an emergency, the cage is provided with an emergency brake which is thrown into gear whenever necessary, bringing the cage to a dead standstill.

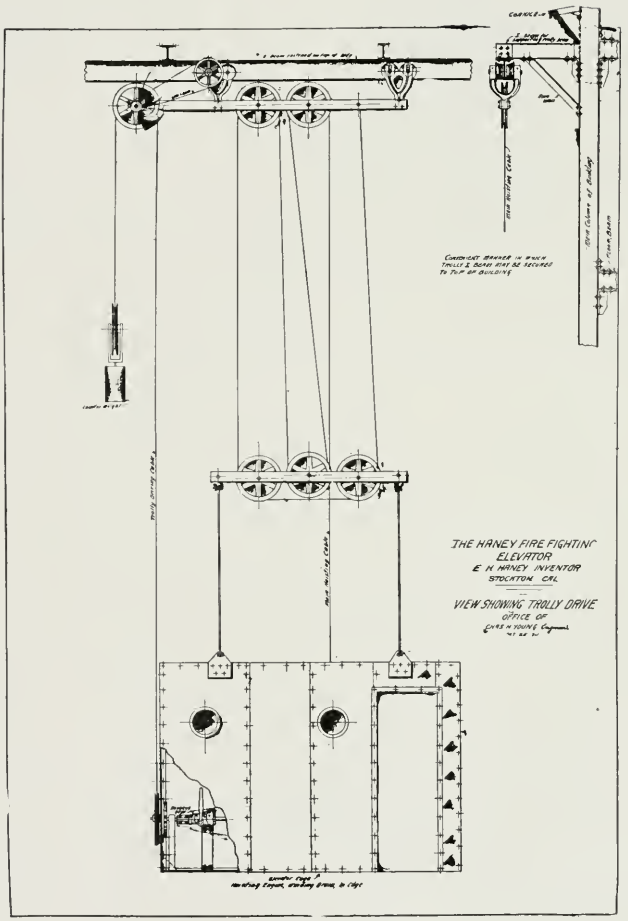
The cage will carry twenty-six persons at one time. The capacity is 6000 pounds. All parts are designed to carry this load with perfect safety.

The flooring in the cage is made of aluminum sections, making all parts of the machinery easy to get at for repairs or adjustments. The side walls of the cage are made of sheet steel, reinforced with angle iron, the whole being lined with asbestos. The sides and ends each have two look-out openings with isinglass doors, as well as two large openings on top fitted with watertight circular doors, which afford protection when passing through flames that may be bursting forth from the interior of a burning building. The heavy hinged side door of the cage not only permits of a gangway from window to cage, but is also used in breaking in window glass, allowing the firemen entrance to the burning building the instant the door is let down, which greatly facilitates rescue work, and in getting a stream of water on the flames. An apparatus of this character would have done wonderful work in the recent disaster in New York, when the Equitable Life Insurance building burned.

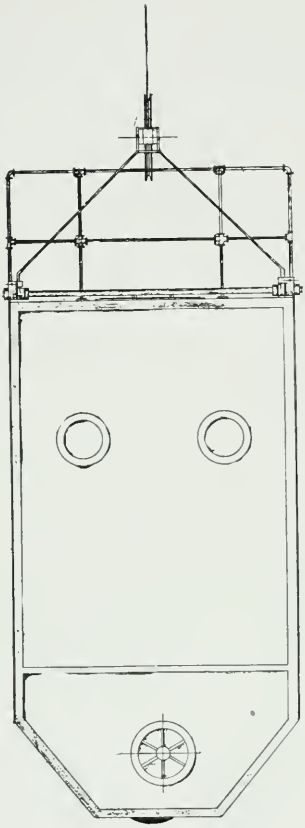
Mr. Haney has the device fully protected by patents in all foreign countries, as well as in the United States, which belong to the company. Mr. A. Thorpe is in charge of the construction work. Special attention was given to the design of this cage and all its machinery by the writer, in whose engineering office the same was designed and drawn up.

All transmission gear casings are cast of aluminum, to reduce weight. The engine used is a 35-horsepower, light weight, high speed engine, the same running at a speed of 1200 revolutions per minute when delivering 35 horsepower. The main clutch is of the flywheel type.

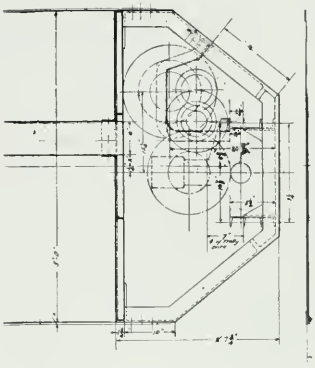
The trolley is driven by wire cable running over sheaves through a tension counterweight, and on to reversing gear sheave. The reversing gear is directly connected to engine and geared down to run 300 revolutions per minute, and is thrown in gear for either direction by a friction band clutch which is thrown in gear by arms sliding on a tapered collar.



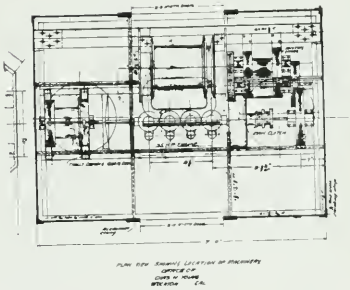
Side View of Present Cage of Haney Fire Apparatus Company; New Cage, Now Nearly Completed, Will Have Machinery Below Floor Line



End View of New Cage
Machinery is Located Below Floor Line



END VIEW SHOWING GEARING
OFFICE OF
EMIL H. YOUNG
STOCKTON CALIF



Space has been allowed for a fire pump, which will make it very useful for elevating water to high points. The trolley is designed to run on either a 10-inch or 8-inch I beam, which will be fastened in a secure manner to the cornice of the building.

Any building, in being built, can be equipped with an I beam and trolley and necessary cable. The cage, which will belong to the fire department, will be carried on a motor truck. In case of fire the cage can be run up to the building and connections quickly made to hoisting and trolley driving cable. This type of fire apparatus is nothing more than what is needed and demanded in these days of aggressiveness, and its mission will be to help to save lives of unfortunate persons who may be trapped in a high burning building, as well as assist very materially in quenching flames.

The Decoration of a Semi-Public Building*

By WILLIAM LAUREL HARRIS

IN preparing my discourse on "The Decoration of a Semi-Public Building," I have presented the subject in its several different aspects, historical, artistic and practical.

First, I show how artistic tradition was established in the semi-public buildings of antiquity.

Then point out that the finest tradition of decoration and the most brilliant innovations in art are found in such semi-public buildings as the temples, monasteries, hospitals and churches of the Old World.

Turning to modern times I then outline the circumstances under which these noble traditions were first put in practice here in New York.

Finally, at the request of the lecture committee, I will tell how I, as an artist, utilize tradition in decorating the Paulist church.

In this way we shall have gathered together, in a very summary manner, to be sure, the principal facts that relate to semi-public art in America.

All learning, artistic and otherwise, seems to have a beginning in the pleasant valley of the Nile, and at a period so distant that the real facts are lost in fable.

We will not concern ourselves with the remote rock cavern of the upper Nile, or with forgotten rivers at out of the way places. We will even turn our backs on the Necropolis of Cheops with all its historic interest.

But let us consider for a few minutes the semi-public building of that mighty city of Thebes.

Described by the enraged Achilles as this great metropolis was,

"The hundred-gated Thebes, where twice ten score in martial state,
Of valiant men with steeds and cars march through each massy gate."

All that is left today of this, the greatest city of antiquity, are buildings that would correspond to our libraries, churches and monasteries. Here we still can admire the most superb of ancient decorations; and learn the force of formal arrangement and architeconic design. The triumphs of the kings of Egypt and the gods and goddesses of the Nile are all depicted in solemn array, depicted in a way that conforms to the architectural plan.

So here in Egypt, 2000 years before Christ, we find the first great principle of decoration, the principle of architectural design and symmetrical ordinance. I would love to dwell longer, if time would permit, on all the splendors of Egyptian art, and point out the many ways in which it influences the mosaics of Rome and Ravenna. But let us turn to mediæval and modern Egypt, let us look to Cairo, where the Alabaster Mosque looms and gleams above the citadel.

Standing beside the Alabaster Mosque we see spread out on the plain below the greatest city of modern Africa.

We see mosques, domes, minarets and towers where holy men are buried or where heroes wished to immortalize their loves, their ambitions or their hopes.

Thus the finest art springs from the hearts of the people, and the glory of the spirit of Cairo overshadows the bare needs of the municipality.

If we look closely at the individual works of art in Cairo we discover that the most dignified and superb of all is a hospital built in 1285. Like a modern hospital it had lecture halls, clinics, libraries and separate wards for every known disease. It also had a wealth of mosaic ornamentation and wood

*A lecture delivered before the Municipal Art Society of New York City in the galleries of the National Art Club.

carving and inlays of marble, mother of pearl and tortoise shell. We still can admire some superb stained glass windows, of Arabic design, which light the tomb of the great Khalif Kalaoun, the founder of the hospital.

Turning now to where the lofty minaret of Kait Bey rises like a fountain of alabaster in the desert air, what beauty is to be admired there.

The wonderful dome of this mosque is adorned with ornamental bands of intricate and lace-like sculpture colored and gilded till it seems to float like a fairy bubble in the azure sky. The interior bursts upon one as a vision of beauty, bewildering in its kaleidoscopic splendor. It was such buildings as these that first fired the imagination of our Gothic ancestors and added a touch of warmth and splendor to the decorations of the chilly North.

Wonderful examples of this influence are to be found in the Norman churches of Sicily, of which I will show you an example later.

No doubt the most magnificent of all ancient churches were in Constantinople, but they are now all in the hands of the Turks. We can, however, form a faint idea of the glories of Saint Sophia and Saint Irene. We can easily understand what a prodigious impression they must have made on the Crusaders and pilgrims from France and Germany.

The churches of Jerusalem were of the same style as those of Constantinople, and have suffered a similar fate.

About the only ancient church in Jerusalem, still in the hands of the Christians, is the Church of the Holy Sepulchre, and this is repaired out of all semblance to the original building.

One other great influence has gone toward building up our modern traditions of decoration, and that is the influence of Greece. This was the force that gave us the renaissance, but it is generally considered to have had more influence on our public buildings than on our churches and other semi-public structures. The kind of decoration that was developed in the renaissance was not really an art of the people, or for the people. It was rather an art for the learned and sophisticated.

Great and imperial Rome was the center of the civilized world for many centuries. Artists were brought from the East to beautify and render glorious the great city.

They carried with them the traditions and experiences of the ages, and out of it all was created the Roman Basilica. And from the Basilica was developed the Christian church of the time of Constantine. And thus in building and decorating we came to have what is called the Roman tradition.

These splendid products of this tradition are still numerous even in modern Rome, and stand as monuments to the artistic wisdom of the early Christians.

These wonderful Basilicas rise on every hand to impress the eye, and they are in some instances built three and four, one on top of another, as at Saint Clement's. Rome inherited all the traditions of the East and West. The decorative arts were preserved in the East, and at a later period were again brought from Asia and Africa by Justinian, Theodora and a host of other noble patrons.

Wherever we turn in Italy we find municipalities rendered beautiful by buildings that are not municipal.

In Ravenna even more than in Rome we feel the ancient traditions of the East. Here the splendor of the Justinian period still lives, and here we can still see Theodora and her women giving an added luster to the capital of the West. From Rome as well as from the East the traditions of sound construction and magnificent decoration spread through all Northern Europe.

Churches were planned, all the stones cut and numbered in the workshops of Rome for far-away towns in France and Germany and even Asia Minor and Syria. These ready-made churches were then shipped by boats, rafts and carts to their destination.

Some of these splendid semi-public buildings still survive the accidents and disasters of passing centuries. Under the shadows of these examples of Roman art there open up local schools of artists, who built the Romanesque constructions of their time. There are not a few fine old Romanesque churches in France similar to Saint Benoit sur Loire, with its exaggerated search after stability. Then there is the Cathedral of Poitiers, where the builders advanced from a heavy Romanesque to the more aerial Gothic, rich in carvings and stained glass. Each advance in art that was made was the result of private enterprise, personal initiative and a real enthusiasm for beauty. The Gothic altar screens and the elaborate doorways are among the most beautiful things in the world. It was in the churches and monasteries that each splendid innovation was effected and each new idea brought forth. In the decorative arts the force of Byzantine tradition was very strong, as we see in the porch of Saint Zeno at Verona. The interior of Saint Mark's, of Venice, still remains one of the most magnificent interiors of Christendom, and the color scheme of the Paulist church at Fifty-ninth street and Columbia avenue.

Again we can visit Sicily and admire the wonderful mosaics in the churches due to Norman architects and Byzantine workmen. Possibly the finest mosaics in the world are the mosaics of Chefalu. All these unique and wonderful examples of art were the great artistic sensations in their day, and were for semi-public use. They were built by the force of a sacrifice made, sometimes by a king or potentate, sometimes by a great bishop or archbishop, and often by the collective action of clubs and guilds.

The state and municipal buildings were so inferior and so few in number that they are now almost forgotten. But it is in Rome that finally all the arts combined to make the most prodigious of all efforts in the colossal building at Saint Peter's.

I think, however, that the earlier Basilica churches make a more direct appeal to the American temperament. For a moment we will glance at two of the prototypes of the Paulist church, Saint Sabina, in its solemn grandeur, and the superb church of Saint Maria Ari Coeli.

All these wonderful churches and many others are admired by the founders of our American school of decorators. They had been enraptured by the beauty of the buildings, the wealth of the sculpture, and the splendor of the mural decorations. These great men who saw and dreamed of the past, who with strong imagination looked into the future and beheld the glories of American art as it will be, lived in the troubled times of our Civil War. As far back as 1864, and probably somewhat earlier, John La Farge and the Paulists began to confer on how the Paulist church should be built and decorated. A little later La Farge brought in Augustus Saint Gaudens and Stanford White. And so it came about that the first of our modern church decorations were made at Fifty-ninth street and Columbus avenue.

These first efforts met with many difficulties and discouragements, for the people were so accustomed to makeshifts and imitations that they preferred shams to real things. It was commonly said that the Paulists were good men, but as mad as March hares. But Fr. Isaac Hecker believed in American art. So they kept on quietly building their church on original lines, and though the times were hard, yet there was no skimping in the masonry.

The walls were so thick that it was looked upon as a joke and laughingly called Fr. Deshonn's Fort. Fr. George Deshonn was the constructor and in the end was the architect in charge. The church was indeed a fort where the ideal intrenched itself against the material, and where American art was fortified against the corrupting influence of the time. And these influences were many. For in the days when the Paulist church was started the art of church building in America had degenerated till it could sink no lower. And it was no easy undertaking this, of reviving an art that seemed to be dead.

The first experiments were of a tentative nature and continued for some ten years, most of this first work was lost. It was, however, at Fifty-ninth street that Mr. La Farge gained the experience which made him the one man in America able to take charge of Trinity church in Boston when that building was decorated in 1876. No one knew better than Mr. La Farge the vital force of tradition. He often said to me: "I am only trying to do an old thing in a new way."

And so the Paulist church grew and grew till it is what you see it today. Great names in the artistic world have been associated with the work. Not only did Mr. La Farge do twenty-two great stained glass windows and paint nine decorative panels, but Stanford White designed three of the most important altars, including the high altar, which is the most splendid altar in America. The first commission that ever came to Frederick MacMonnies was the sculpture on this high altar. Robert Reid, Bela Pratt and Phillip Martiny have also worked in the church, and Grant La Farge designed the Narthex.

Other men, like Saint Gaudens and Thomas W. Dewing, have been called in for consultation, till now it is a museum of American art.

But there was a moment after Fr. Hecker's death when the whole scheme seemed about to fail.

The imitation of foreign paintings, the slavish copyist and the manufacturer of church goods gained a footing. All sorts of incongruous things were put in, to the great detriment of the general effect.

For three years this sort of thing went on. But, fortunately, there was an outcry of sufficient force to stop the sacrilege.

And it was at this juncture that I was called in to make right what was wrong, and to bring order out of confusion.

So I designed a general scheme complete both from the theological and the artistic point of view, and this is now the scheme adopted for the church.

It is now twelve years since I perfected my general plan, and one end of the church is now about finished. Several of the side chapels are also well along. The general decorative motif to tie the whole church together is the parable of the vine, which makes it possible to have continuous ornamental bands going from one end of the vast church to the other.

Then this general motif of the vine is varied in each side chapel by symbolic ornamentation suitable to the special character of the chapel. In Saint Patrick's chapel we see the shamrock, the Irish ivy, and the foliated design so characteristic of old Irish manuscripts.

In Saint Agnes' chapel we see the lily of purity and other special symbols worked in with the ever-present vine of spiritual life. The Lady chapel and Saint Joseph's chapel each have an appropriate arrangement of figurative ornament. I will not weary you by going any more into detail, it is sufficient for me to say that every square foot of the vast church is considered in my general schemes, and every picture or bit of ornament has a special meaning and a spiritual significance.

The exterior of the church, now bare and grim, will some day be embellished with colored bas-reliefs and mosaics, lending a glow of splendor to an otherwise dull neighborhood, and adding a bright spot to our municipality.

I have thus hastily outlined the decorations of this semi-public building, the Paulist church, because the difficulties here overcome are the difficulties that confront each and every man who tries to do something original and fine here in America.

Moreover, this church has an historic interest, as it was here that the pioneers in the decorative arts made their first substantial effort to equal if not surpass the splendors of antiquity and to maintain the noble traditions that are founded on the whole experience of the human race. The men who had to do with the inception and first development of the work are now dead. We cannot honor them too highly.

They sacrificed much for a dream and an ideal. Their dream has come true and their ideal will remain to point out for us the glorious future of American art.

And if you pass by the memorial to the Paulist Fathers in the south tower I trust you will pause for a moment and think of the men buried beneath your feet and remember what their devotion to art has meant for us all.

Finally, I may confidently say that Americans do not believe in an endless array of columns as previously described, nor in architraves or pilasters in meaningless display. Neither do we wish in our semi-public buildings paintings or decorations just because they are oil paintings or water colors.

But we do believe that every material and object known to man, and every art and science should be used to express in its most noble form the spiritual aspirations of our American people.

And when this is done the glory of New York will overshadow its material necessities, and then we will have our City Beautiful.

* * *

The Writing Amateur and "Home" Architecture

One does not need to be an architect to fancy with what amusement, not unmixed with a certain irritant quality, the practitioner of assured position must read—if, indeed, he takes the trouble to read at all!—the nonsensical, ill-informed and hopelessly absurd rubbish put out by the "furnisher" magazines as "architectural" copy. The bulk of this stuff, for some occult reason, is written by women who having gained a small success in the field of interior decorating, seem to argue therefrom a competence to pass upon every phase of home planning from exterior embellishment to garden layout. A pet theme with this particular class of writers is the "remodeling" of old suburban places along "modern" and "approved" lines. Fortunately, no one in a position to undertake any work of the kind pays the slightest heed to these scribbling female babblers, the accepted course in cases of the kind being to entrust the making over process to an architect of repute, and refrain from so much as the appearance of interference. The question as a whole harks back to an opinion expressed in these columns some weeks ago which was, in effect, that architecture is entirely too much written about by persons obviously not competent to discuss it. Much remains to be said upon various phases of the art by men of trained intelligence and experience that will be of real and lasting value. Unfortunately the men best qualified to say these things are too busy making architecture to write about it to any considerable extent. The result is a deluge of half-baked semi-architectural opinions from the pens of amateurs whose writing gift is out of all proportion to the capacity given them to think, together with a growing colony of "picture" magazines which, however admirable pictorially, are textually futile and fatuous.—Builders' Guide, Philadelphia.

Interior Decoration

By M. STAPLEY, in The American Architect.

OF William Kent, the early Georgian architect, it was written, "Not only was he consulted for furniture, frames of pictures, tables, chairs, etc., but for plate; and so impetuous was fashion that two great ladies prevailed on him to design their gowns." All of which means that in Kent's day decoration, even to the minutest detail, was a branch of architecture. Then came a long period when the study of the inside of the house fell upon evil days. It finally got completely away from the architect, and the fault was largely his own—for his tendency toward specializing meant proficiency in one thing to the exclusion of all else. But, fortunately for the profession, an occasional member rises above this modern tendency and brings decoration back under the wing of her elder sister. I mean not merely that kind of decoration which consists mostly of built-in architectural features, but also that in which the late Stanford White so conspicuously excelled—the assembling of old fabrics, mantel-pieces, gilded cornices and marble columns into an harmonious whole, often even in defiance of periods. Whether men of similar abilities are to become more numerous depends on whether those about to enter the profession can be made to feel the necessity of bringing a broader culture to their work. And if general culture is too much to ask of the followers of Bramante, Peruzzi, Michael Angelo and the other geniuses of the renaissance, let them at least be equipped with some knowledge of commonplace things pertaining to the home. Furniture, for instance, is one of these commonplaces. So intimately is it connected with daily life that we have no thought of home or comfort apart from it; yet how many architects are well informed on the subject? That the layman is not is explained (but not excused) by that ignoring of essentials that characterizes modern education. Even those great agencies for the dissemination of knowledge, the newspapers and popular magazines, never until recently paid attention to household arts and crafts, though other peaceful arts like music, literature and the drama received full attention. Yet bad art in home life is worse than bad art in theaters, books or exhibitions; for its influence is constant instead of merely for the passing hour. It tells for good or bad upon the taste of the young long before the other agencies mentioned begin to affect them. Once in a while families aspired to something better than department store decoration; but their wants were not easy to satisfy for such opposition came from scattered individuals, while the manufacturers of poor household furnishings were a united body proclaiming their wares by means of specious advertising. Too many homemakers were ready to read and believe these advertisements, and, knowing nothing of the pranks wood can play after it has been hurried, unseasoned, into chairs and tables and then much varnished in the hope of keeping the air from affecting them, they bought copiously. Such people suffered for their lack of a little familiarity with commonplace subjects.

But the architect has had more than the layman's education. He has had special training. He ought to know the qualities of different woods and the best manner of constructing them into houses and the contents of houses. And when it is a question of buying new furniture, he should know that it is not so much a matter of a good Sheraton or Chippendale reproduction as it is of an object designed to embellish some definite place and executed in view of this special destination, in order that it may

respect and serve the architectural ensemble of which it is a part. When the architect understands all this, why should he not have his daily consulting hours like a physician and charge a fee for advice on household problems? Clients could thus build new houses, or put their old ones in order, under the direction of an expert. The architect should be a connoisseur of decoration even where he himself does not practice it.

Meanwhile the fact remains that a great many in the profession (perhaps because constant dealing with the sterner and more structural materials lessens their deftness in handling delicate ones) have not "the knack" of the decorator; and most decorators have not the training to do a really architectural piece of decoration. Said a prominent New York architect to one of the kindred profession the other day: "I wish you would come up and look at my studio. I have a splendid collection of old furniture and fabrics, but I seem to have made a fizzle of furnishing a room with them." And similarly a decorator who had created a beautiful dining-room in a Fifth avenue residence, on being asked to submit a design for a screen between this same room and the marble conservatory that the architect himself had done, admitted after several attempts: "I can't do that thing; it is too architectural for me." Here is proof that a certain discrimination is acknowledged by the men themselves.

As matters now stand there are phases of the decorator's business that the architect can hardly be expected to transact; and since the decorator is also in a sense a contractor receiving commissions on materials furnished, the architect-decorator, who worked along the same lines, would be denounced as unprofessional. Broadly speaking, a decorator runs a store. Most of his clients expect him to have somewhere a showing of rugs, furniture, antiques or even perhaps a paneled room from some demolished castle, that they may get an idea of how their own rooms will look when furnished. The architect, whose profession ever since the good old days of William Kent has occupied itself principally with designing the building and then superintending its construction, all too readily remains within his prescribed limitations. Yet in truth the two matters are closely allied, and the architect, where he is not also the decorator, should have the other's closest co-operation.

Edwin H. Blashfield, in a plea for this, said recently: "The architect must always be looked up to as the commander-in-chief; but we (mural painters) ought to collaborate with him from the moment our part has been assigned to us. We should accompany him to the quarry and pick out the stone that is to form the background of our work. This would avoid many of those final disappointments due merely to the architect and artist not having been in touch with each other from the start."

If this is true of the mural painter's contribution to the interior of the building, how much truer is it of the general decorator's? Conditions at the building, the amount of furnishings previously owned by the client and the character of the room to be decorated will all, if jointly understood in the beginning, assign each party his definite field. Where certain styles are fixed upon and rigidly followed each man's path is comparatively clear; but so many American homes are furnished with the owners' collection of art objects, representing every period and nationality, that the wisest thing may be to show these objects to the architect and commission him to build the right background for them and rearrange them in their new quarters.

In considering even the smaller residence—anything say under fifty thousand dollars—it seems advisable that the architect should always be

responsible for the inside as well as the outside of the house. In houses of this type the owner would not call in the services of a decorator who had costly antiques to work into his schemes, nor of the dismantler of old chateaux who was prepared to re-install a Louis XV salon complete. The setting-off of the architect's work would therefore rest between his client and himself. Haply there is, with the former, a growing appreciation of the truth that he himself does not know quite as well as the architect what particular furnishings belong by reason of their design, material and cost, to the house in question. Clients are slowly but surely realizing that even those interior features which are not in the nature of built-in accessories should be designed by an architect.

Indeed, they are going even farther; they ask him to undertake the planting of the grounds. To meet and encourage this desirable attitude on the part of the client the architect must get back what distinguished the great architects of earlier days—conversance with the several subjects kindred to his own.

The recent establishment in this country of several English firms (or rather their agents) whose sole business is the dismantling of old English and French mansions and the putting into negotiable form of the woodwork, mantles, etc., contained in them, plays an important part. On the face of it the proceeding seems commercial, but to lovers of Elizabethan, say, it is far more satisfactory to buy a genuine old room complete than to give to a modern workman who never heard of Elizabethan traditions some antiquated tools and ask him to produce some inaccurate work in the hope that it may look like its prototype. One American who tried this ended by buying from one of these firms an entire sixteenth century half-timber dwelling which is being set up in Connecticut; and, incidentally, the architect who undertook its reconstruction is learning more about early English methods and materials than ever he was able to acquire during several months of study in England.

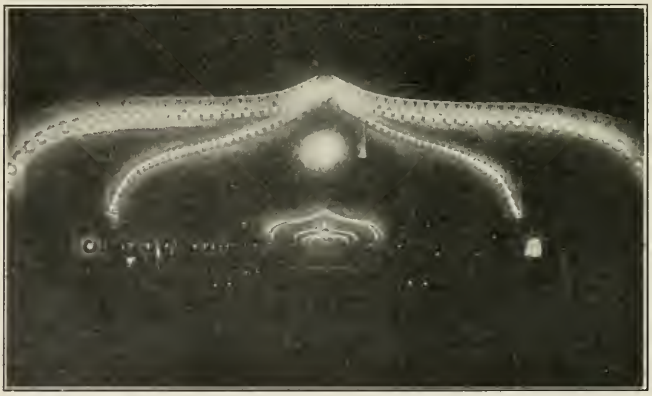
No matter who embellishes the apartment the three most obvious considerations are floor, walls and ceiling. Of these the last is most important from the architectural standpoint, the second from the decorator's and the client's. The ceiling with a strongly architectural people like the Italians, was the climax—the pièce de résistance of the salon; but it is too often forgotten by those of today who would have this same magnificent feature, that the Italian room on which it looked down was almost empty of movable furniture—of the very things that the modern American aims to possess in such profusion that his room has no climax—no concentration. Furthermore, the Italian ceiling springs from comparatively plain walls—large restful surfaces whose occasional spot of applied decoration such as hangings or painting did not contend with the structural ornamentation above. With the less architectural early French and English mansion builders, the structure of the ceiling was left exposed, with oak beams painted and carved, while more attention was lavished on the walls; and this is the precedent for most of the work today, since we live under the same climatic conditions that forced the French and English to do what the Italians did not do—spend most of the day indoors with the walls of a room ever before our eyes. It is climate again, in part at least, that has relegated our floors to the third place since, not only for richness but also for warmth, we cover them with rugs, thus burying whatever mosaic, tile or inlay of wood they may boast.

Steel Arches for Street Illumination, Marysville, California

Novel Street Illumination at Marysville

THE accompanying illustrations give a good idea of the possibilities of attractive street illumination for the business section of a wide-awake city or town. The arches were designed and erected by the Butte Engineering and Electric Company of San Francisco, and are somewhat similar to those on Fillmore street in the Bay City.

The arches are 6 inches higher than the Fillmore street arches, measuring 31 feet to the top of the center piece, and the span is 86 feet 6 inches for six arches, and 98 feet for one arch. Each arch is illuminated with 120 16-candlepower lamps, with a 500 Watt Tungsten light in the center. The steel used in the erection of these arches weighed over 32,000 pounds.



The Arch Illuminated

Among the Architects

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February Meeting of San Francisco Chapter, A. I. A.

By SYLVAIN SCHNAITTACHER, Secretary.

A SPECIAL meeting of San Francisco Chapter, American Institute of Architects, was held at the Tait-Zinkand Cafe, on Tuesday evening, February 20, President J. G Howard, presiding.

Messrs. Thomas F. Hastings, William Symmes Richardson, Henry Bacon, Robert Farquhar and L. P. Rixford were present as guests of the Chapter.

Mr. Howard, chairman of the competition committee, reported that the committee had been in correspondence relative to competitions for school houses at Woodland and Sacramento, of which the membership was aware through the notice sent out and that it was hoped in the case of the Sacramento school house that the program would be modified to conform to the institute code.

Mr. Faville, for the civic improvement committee, reported that there had been no meeting of the committee, but expressed satisfaction at the appointment by the mayor of a civic center commission, consisting of Messrs. Howard, John Reid and Meyer.

Mr. Mullgardt, chairman of the committee on architectural league and education, advised the members regarding the postponement of the convention of the architectural league of the Pacific Coast at Los Angeles to April, and stated that the drawings to be submitted for the traveling scholarship would be exhibited in San Francisco.

Mr. Bakewell, of the housing committee, stated there was to be a conference regarding the tenement house law, at the board of public works, and suggested that a special committee other than the housing committee be present.

The following communications were ordered received and placed on file: from Mr. Chas. T. Mott, his resignation from the Chapter, owing to his return East; from Mr. A. F. Rosenheim, president, and Mr. Fernand Parmentier, secretary, of the Southern California Chapter, A. I. A., regarding the postponement of the Architectural League convention until the annual meeting of the State Board of Architecture in April, and inviting the members to Los Angeles at that time; from the General Contractors' Association, regarding contract forms; from the Michigan Chapter, A. I. A., copy of minutes of annual meeting of January 16, 1912, and from Mayor James Rolph, Jr., in regard to meeting of the board of public works to consider the tenement house law.

On motion made, seconded and carried, the chair was empowered to appoint a special committee to consider the matters contained in the communication from the General Contractors' Association.

The secretary called the Chapter's attention to the report submitted by the building laws committee at the meeting of February 15, and which was amended at that meeting, and stated that no action had been taken regarding the appointment of a committee to submit the proposed ordinance to the proper authorities. On motion made, seconded and carried, the matter was left in the hands of the original committee for proper action.

Mr. Howard expressed the appreciation of the Chapter at having present the distinguished gentlemen who were to be of the advisory council of the Panama-Pacific International Exposition, and called on Messrs. Hastings, Richardson, Bacon and Farquhar, of the commission, all of whom made remarks appropriate to the occasion and appreciative of the architectural opportunities afforded by the site and scope of the 1915 Exposition.

At the conclusion of the remarks, the gentlemen mentioned above were given a rising vote of thanks by the Chapter.

Form Partnership

Messrs. William Wilde and Erwin Schaefer have formed a copartnership for the practice of architecture and have taken offices in the Albany block, Oakland. Mr. Wilde was formerly with Henry F. Starbuck, now of Fresno. The new firm has quite a little work under way, including a $15,000 city hall at Martinez, a brick store building in San Francisco, a store and apartment house for C. S. Nelson in Oakland, and several residences.

Messrs. William Coates and Harry Traver have formed a partnership and have taken a suite of offices in the Head building, San Francisco. Both young men have had considerable experience in following their profession and should make a success of their business venture. Coates was formerly State Architect, while Traver has for some time been connected with the City Architect's office. Before coming to San Francisco, Traver was a member of the drafting force in the State Architect's office at Sacramento.

New Certificated Architects

The following have been granted certificates by the State Board of Architecture for the practice of architecture in California: Richard D. King, 1647 Middleton place, associated with Architect Edward Cray Taylor, 528 Consolidated Realty building, Los Angeles; Leon Carl

Brockway, 305 N. Raymond avenue, Pasadena; Garrett Van Pelt, Jr., 100 E. Colorado street, Pasadena; Winsor Soule, "The Grayson," Santa Barbara; Harry M. Banfield, 333 Clay street, and Edward C. Thorne, 1232 W. Thirty-first street, assistant inspector of buildings, Los Angeles.

Annual Meeting of Oakland Architectural Association

The Oakland Architectural Association held its second annual banquet in February. The principal speakers were Mayor F. K. Mott, Harry Anderson, commissioner of public works; Walter J. Mathews, C. W. Dickey, J. J. Donovan and Louis S. Stone. C. W. Childs, who is connected with the board of education in Oakland, displayed some interesting pictures and photographs of the modeling work of the new city hall, while Donovan discussed entertainingly the designs and models as they were thrown upon the screen. Pictures were also shown which were readily understood by those present to represent local people and conditions. Those present were: Hon. F. K. Mott, H. S. Anderson, W. J. Mathews, C. W. Childs, F. Soderberg, John Bakewell, William Wharff, G. B. Richardson, J. J. Donovan, C. F. Ashley, William Wilde, L. S. Stone, S. B. Newsom, J. C. Newsom, W. J. Wythe, F. D. Voorhees, W. D. Reed, C. W. McCall, William J. Wright, D. V. Deuel, C. W. Dickey, Erwin Schaefer, E. W. Cannon, E. A. Zeitfuchs and H. C. Smith.

The following officers were elected for the ensuing year: Louis S. Stone, president; C. W. Dickey, vice-president; D. V. Deuel, secretary-treasurer. There were five new members elected. The association is increasing its membership rapidly.

Architects Parker and Kenyon Busy

Architects Parker and Kenyon are busy with considerable high class country work. They have a $20,000 bank building at Princeton, a brick library building at Dixon and a $30,000 Elks building for Nevada City. Walter Parker, a member of the firm of Parker & Kenyon was done an injustice in the January number of this magazine by a misleading caption beneath the full page cut of a bank and office building on page 94. Mr. Parker designed the structure and not Mr. F. W. Fitzpatrick. We are glad to make this correction for Mr. Parker whose ability as a designer is recognized.

Phelan to Build Hotel

James D. Phelan will build a seven-story $90,000 hotel on Market street, near Seventh, San Francisco, from plans now being prepared by William Curlett & Son. Phelan is having built in Los Gatos a beautiful Italian villa, also from plans by Curlett & Son.

Los Angeles Architects Meet

"Ceramics and the History of Clay Products in Art and Architecture" was the subject of an interesting paper by Mr. William Wade before the architects at the January meeting of the Southern California Chapter of the American Institute of Architects. Mr. Wade is the senior member of the firm of J. & W. Wade Company, which has been engaged in the manufacture of tile and other clay products at Burslem, England, since 1867. The speaker traced the history from the time of Babylon and Egypt to the present day and showed how the diffusion of knowledge in the art followed in the wake of the conquering armies as each nation rose and fell. The height of perfection attained by some of the ancient peoples cannot in many respects be equaled in the present age, although some of the lost art is continually being regained.

An important matter that was thoroughly discussed at the business session was the ordinance, which has been passed by the council and is awaiting action by the mayor, providing for the elimination of the chemical tests from the requirements of the cement testing section of the city building ordinance.

Personal

Architects Cunningham & Politeo, of San Francisco, announce the removal of their office from the Chronicle to the First National Bank building. This firm has just completed the drawings for a splendid class A theater to be erected on upper Market street for the Boston and San Francisco Amusement Company.

Richard Martin, Jr., following the example of E. M. Lazarus, William Travis, and other prosperous Portland architects will relieve the tension of business and incidentally load up with new ideas and other inspirations, by taking a year's tour through European countries. May Brother Martin have a fine trip and "homeward fly" at its close.

Architects Welsh & Carey Busy

Among the San Francisco architects who have been exceptionally busy since the beginning of the new year are Messrs Welsh and Carey. They have let contracts aggregating more than $200,000 in the last three months, and at the present time are working on plans for a picturesque private hotel at Stockton, a convent at Livermore, an apartment hotel and several smaller structures. This firm made the plans for an apartment house now under construction for the Sheehy Estate, also a warehouse and a church.

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WHO SHOULD DESIGN FORMS FOR CONCRETE WORK?

An Eastern contractor who has had considerable experience in concrete construction, has raised an interesting point for the architect and engineer to decide. He contends that it is the duty of the man who designs a concrete building to conceive the form work as well. Occasionally, just as he will now design some especially important bridge falsework, the engineer prepares form plans for some special concrete structure, but, generally speaking, the falsework is designed, prepared and erected by the contractor. This prevailing practice, says Engineering and Contracting, has come about perhaps from two principal causes. The first is that the engineer has conceived form work as being solely temporary construction plant like a staging for brick work, and therefore a problem which did not concern him beyond the point of seeing that the objects sought, namely, safety and certainty during construction and a completed structure of acceptable quality and character, were reasonably well assured. The second cause has been the great development, particularly in reinforced concrete building work, of engineering-contracting organizations or firms which assume all problems of design and construction guaranteeing an acceptable product. Incidentally, in the work of these firms we do have examples and about the only ones of form work considered as a definite part of the engineer's designing problem. Elsewhere as already stated it is considered usually as purely a contractor's construction problem. Whether or not this is the logical viewpoint, it is the prevailing one. Should it remain so?

Form design is a problem which without question, is worthy of the best engineering talent. The problem is not a simple one. It is not merely in any specific case a problem of designing a structure which will shape to dimensions and sup-

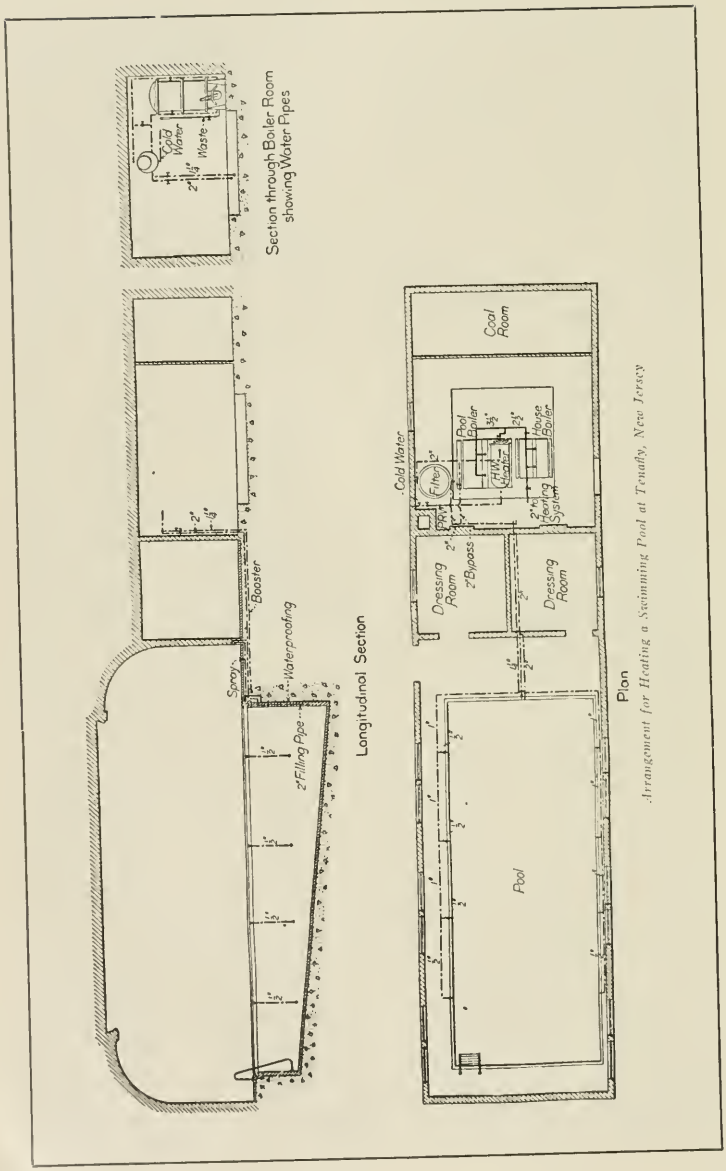
port safely a certain volume and weight of concrete. It is rather the problem of designing a set of moulds for repeated use in forming and supporting successive similar units composing a complete structure. This involves much more than a mould which will properly shape and safely sustain one beam or bracket or column; it involves the making of a mould which can be erected, taken down, moved and re-erected many times, with the greatest speed and the least labor, to shape and support in succession a large number of beams or brackets or columns. It involves, too, not only the economic use of material by careful design but also economic consumption by design which will insure as high a salvage value as may be. Forms are not temporary structures in the sense that staging or falsework are, they are rather operating construction plant in almost the same sense as is a concrete mixing and handling plant.

Keeping in mind what has just been said the question is: Is it better that the engineer should design form work or is it better that the contractor should? The answer is that it depends upon who the engineer is and who the contractor is. An engineer with an intimate knowledge of construction work and costs may easily be the best possible designer of form work. On the other hand an engineer lacking this special knowledge may just as easily be about the poorest one imaginable to design form work. The extremes in ability between contractors are almost as far apart. On the whole the contractor's training is more important to the task than is the engineer's. The contractor may fall short as compared with the engineer in knowledge of statistics but the engineer seldom has the contractor's knowledge of practical operating conditions and costs. Frankly, we believe that on a cost basis the average contractor will prove a better designer of form work than will the average engineer. If this be so then it is the better engineering practice that the contractor should be the designer.

WHY IS EXPOSITION WORK AT A STANDSTILL?

This inquiry is heard on all sides. With one year gone and but three remaining, the announcement that the beginning of construction work will be delayed until October comes like a solar-plexus blow to both commercial and building interests in San Francisco. The contributors have paid their money with the expectation that it would be utilized, not hoarded. Large numbers of mechanics have been attracted to the city by the Exposition announcements and these are idle and in many cases without funds. Other projected buildings are waiting for the Exposition wheels to start. When these move, then the machinery will hum all along the line. At present the money remains without interest (or at least no interest is shown in the credits on the Exposition statements). Why keep it tied up in a napkin when its use would mean security for the Exposition and prosperity for San Francisco?

Then, too, from October, barely two years will remain for a vast amount of construction work. When we consider, for instance, that one small structure like the Hearst building, began four years ago, is not yet completed, is not the entire Exposition jeopardized by further postponement, especially in view of possible delays on account of non-arrival of materials, labor strikes, etc. With our early start it was hoped that the Panama-Pacific Exposition would offer an example of a World's Fair that was complete when the gates were opened and not the usual complex, congested and confused assortment of unfinished buildings and incomplete exhibits.



Arrangement for Heating a Swimming Pool at Tenafly, New Jersey

HEATING AND LIGHTING

Plumbing and Electrical Work

Heating a Swimming Pool*

By C. TERAN

A SWIMMING pool is generally a luxury, not a necessity. For this reason not many are built, and a description of the system installed for Mr. Herbert Coppell at Tenafly, N. J., may prove of interest.

It is housed in a building of one story, and includes the pool room, two dressing-rooms, boiler and coal rooms, all on the ground level. The pool is sunk below grade, is built of concrete, waterproofed and lined with English size enameled brick. It is 38 feet long, 15½ feet wide and 6 feet mean depth below water level. The cubical contents are, therefore, 3534 cubic feet.

The heating plant was designed to heat this volume of water in ten hours, or at the rate of 353 cubic feet an hour. Ten hours is a convenient length of time for heating the water, because the required apparatus is not specially large. If the apparatus was much smaller it would, of course, require a longer time to heat the water, and this time added to that necessary to empty and clean the pool would make the period of time which the pool would be out of commission too long. The time required to empty and clean this pool is four to five hours.

The installation includes two cast-iron sectional boilers, a Berryman service heater and a filter. The water is reduced to 30 pounds pressure on entering the building. It is then heated in the Berryman heater by steam generated in the boilers, and it is then filtered and discharged into the pool. For filling a main inlet is used; this enters the pool at the deep end near the bottom; there is also a nozzle above the waterline which is used to produce a spray over the pool.

On account of the proximity of the walls of the pool to the outside ground a loss of heat in the water was anticipated and provision made to replace the loss. Careful consideration was given to the various methods that could be used to accomplish this purpose, and injecting water heated to a high temperature into the filled pool was decided upon. The reason for using a high temperature is that the water is not taken from the pool to be reheated, as this would necessitate a circulating pump, but fresh water is used, and by heating it to a high temperature a minimum quantity of water is required and less coal burned. Steam was not considered a good medium, because it imparts a peculiar odor to the water, due perhaps to the presence of oil in the boiler. The water is injected at four points on each side of the pool near the bottom, through nozzles passing through the brick lining and flush with it. This arrangement gives a good distribution, and is neat in appearance. It is found that during the winter months the water loses 2° to 3° F. in twenty-four hours.

In filling the pool the water is heated to 75° F., which, on account of heat losses in transit, etc., gives an ultimate temperature of 70° F. The water injected to make up the heat loss is heated to 180° F.

The large boiler is used to heat the water when the pool is being filled. This was computed as follows:

Cubical contents of pool.	3534 cu. ft.
Cubic feet of water to be heated per hour.....	353 cu. ft.
Pounds of water to be heated per hour.....	353×62.4=22027
Rise of temperature of the water from 40 to 75=35°.....	
Heat units transmitted to water per hour; 22062×35.....	771,000 B. T. U.
Coal necessary to be burned per hour 771,000÷8000.....	96 lbs.
Grate area 96÷8.....	12 sq. ft.

A boiler having a grate 40 inches wide by 48 inches long was installed. The other boiler shown is used to heat the building and to heat the water injected into the pool to make up the daily loss of heat; by this arrangement, the necessity of keeping a fire in the large boiler is avoided. As there was no sure method of predetermining the loss of heat of the water in the pool, in selecting this boiler liberal allowance was made for this purpose above what is required to heat the building. The amount of direct radiation in the building is 400 square feet, all behind screens; the boiler is rated at 1000 square feet, and has a grate 21 x 27 inches, or about 4 square feet.

The service heater was specified of proper size to heat 2800 gallons of water per hour from 40° to 80° F. with low pressure steam, and it was left to the manufacturers who furnished it to design the proper size heater for this duty. The filter was specified in a

*Presented at the annual meeting of the American Society of Heating and Ventilating Engineers, New York, January 23-25, 1912.

similar manner. No automatic temperature control was installed, and none has been found necessary. An even temperature of the water is attained by maintaining a steady fire and regulating the flow of water by hand.

As a matter of precaution against a leaky pool the water pipes were installed so that they do not pass through the waterproofing of the wall of the pool below the water line. This was accomplished by installing the pipes horizontally under the floor of the pool room and dropping branches to the proper depth in the pool between the waterproofing and the brick lining. All concealed water pipes are brass; other pipes are galvanized iron.

The pool, which may be considered an experiment, has been so satisfactory that Mr. Coppell has ordered built a much larger pool, 44 feet long by 26 feet wide, with the addition to his house and the equipment for the new pool has been designed on the same principles as the one described.

Ventilating Moving Picture Halls

A committee representing New York Chapter of the American Society of Heating and Ventilating Engineers reports the following recommendations for the compulsory ventilation of moving picture auditoriums:

Floor Area Per Occupant.—A minimum of 5 square feet of floor space per occupant, exclusive of passageways, shall be provided in the audience hall.

Cubic Space Per Occupant.—A minimum of 90 cubic feet of air space per occupant shall be provided in the audience hall.

Quantity of Outdoor Air.—A positive supply of outdoor air from an uncontaminated source shall be provided the audience hall at all times while the show place is open to the public, and the quantity of this positive supply of outdoor air shall be based on a minimum requirement of 20 cubic feet per minute per occupant.

Temperature.—The temperature of the air in the audience hall shall be maintained throughout at the breathing line (persons being seated) within the range of 65 degrees F. to 70 degrees F., and the temperature, distribution and diffusion of the supplied outdoor air shall be such as to maintain this result without uncomfortable draughts.

Direct Heat Sources.—Any good heat source which does not contaminate the air will be accepted to supplement the warmed outdoor air supply. Gas heaters or coal stoves are prohibited.

Machine Booth Ventilation.—Enclosures or booths for the motion picture machines shall be provided with special exhaust ventilation positively changing the air in the booth at least six times per hour, and being entirely independent from any exhaust ventilation of the audience hall. This ventilation shall consist of a number of small metal-screened openings near the bottom of the booth, and a metal or other fireproof flue (size not less than 15 inches in diameter) ex-

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tending from top of booth and carried to proper place of discharge outdoors and augmented by mechanical appliance or otherwise to secure the results herein stated.

General questions, such as inspection, method of enforcing the requirements, penalties for noncompliance, etc., are left for each town or city to determine.

Modern Gas Lighting

Modern gas lighting had its beginning about thirty years ago in the introduction of the Welsbach burner, and this has again been recently improved by the invention of the inverted mantle burner.

Besides the great improvements in economy, quality of illumination produced and appearance of fixtures, modern gas lighting also includes equally important strides in the way of convenience. The old method of lighting a gas flame with a match or lighter is now as out of date as the flame itself. The modern method of lighting and extinguishing is either by means of the "by-pass" or the electric ignition system. The "by-pass" is simply an arrangement by which a tiny "pilot" flame is kept burning when the lamp is turned out. This has the very great advantage of indicating by its own light the location of the lamp, so that there is no need of fumbling around in the dark to find the place where the light is to be turned on. The electric method permits of the lights being turned on or off from any distant point. With these improvements gas now possesses equal convenience with any other illuminant.

The gas mantle also has been greatly improved within a few years, so that the best mantles now made are much tougher and last longer in use. In many cases an inverted mantle will last two years.—B. F. Hamerstrom, in "Illuminating Engineer."

Putting up a Big Warehouse

Work has been started on a six-story reinforced concrete warehouse at Second and Brannan streets for the Blinn Estate. The construction is in charge of the George F. Stoeffels Company, Pacific building, which has taken the contract on the percentage basis. The plans are by Frye and Schastey, and call for a six-story structure of standard construction type. Foundations, walls, floors, and roof will be of reinforced concrete, while all windows will be of wire glass, with metal or galvanized iron trim. There will be two elevators. This building is only one of several good-sized jobs which the Stoeffels Company has under way.

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The Artistic Side in Modern Illumination

By L. R. HIRSCHFIELD, in the Illuminating Engineer

MODERN illumination, in this practical age, consists of getting the most efficient light in the simplest manner. All manner of lighting fixtures and lamps are designed with a view to the artistic embellishment of the surroundings, but the main thought, however, in the construction and arrangement of the present day lighting effects is the ultimately practical purpose for which the light is intended.

Therefore, in treating this subject, "The Artistic Side of Modern Lighting," we must keep in mind, not only the artistic side of the fixture or lamp, but the practical side as well. These two fundamentals go hand in hand, and wherever they are proportionately combined, we find the ideal lighting scheme.

This combination has doubtless been the result of the ingenuity of present day designers, and the practical arrangement of lamps is found especially in those made in this country, owing no doubt to the very strict laws governing the installation of electricity in any form in the United States.

It is a generally accepted fact that the interior treatment of the rooms of a house governs the type of lighting fixture to be used, as, for example, a home treated in Colonial design of architecture demands a Colonial type of fixture.

It is, however, a common occurrence for the house builders to vary the treatment in the different rooms, so that we find in some of the modern homes today French designs in one room, English designs in another, and Dutch designs in the third.

Many of the fixtures and lamps in use today we find are copies of those periods that were famous for their originality and of such lasting beauty that they are still universally used throughout the world. We refer to such periods as the Elizabethan, French, Classic, Flemish, and so forth. Nowhere can we find more beautiful designs than in the detail of a Louis XV or XVI bracket or chandelier.

The ornamentation of the furniture, draperies and interior trim we find reflected in the castings of back plates, standards and arms of the lighting fixtures of the periods. For such room arrangement there is a wealth of design to select from, and one finds variations of these types almost everywhere.

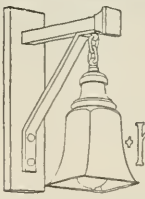
As to the modern designs, typified by the general tendency in house building all over this country today, there is one type that stands out clearly, the influence of which has been felt as keenly as any of the older types, and that is the new art or craftsman type of design.

There is, and has been for a long period of time, a great demand on the part of the people for simplicity, and we find this feature reflected in the styles of homes that are being built today.

This type in a lighting fixture is, in a true sense, a modern conception, yet its influence dates back to the very earliest period when lights were originated, or such forms as were used for the support of lights.

While there has always been, to some extent, in every form of design, a crafts type, it is today more generally accepted as a type than ever before.

There is no line that can be drawn definitely bounding this style of modern lighting, but one fact stamps it as the



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ideal for the style of house it is to be used in, and that is its artistic simplicity and practicability. It has a tendency toward severity in lines, but it is of such character that it is always pleasing, and a freshness about the design that is welcomed by the disciple of the simple life.

One sees reflected in the straight, simple lines that characterize the crafts type of house, the fundamental lines that are used in the fixtures. Unquestionably, this type of design has created a deeper sense of the practical, and also an appreciation of man's handiwork, than has

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anything else produced in the last fifty years.

One acknowledged fact is that strong, bright lights are detrimental to health, and we find that nowadays all lights that are used for the illumination of a home are shaded or protected. As a direct result of this condition we find among the popular fixtures the hanging dome, used largely in the dining room and library, and hung in such a position that the lights are hidden from view, but a beautiful, clear light is cast upon the table.

Artistic effects in this style of fixture are unlimited, and many are the beautiful designs incorporated by various means in the dome itself. Leaded glass offers unusual opportunities in design and colorings.

There is a wide range of opportunity to match interior decorations, and as we strive for the practical as well as the artistic, so in determining the proper style of lighting for the various rooms of a home, we should be particular as to the lighting treatment for each room.

The generally accepted arrangement for artistic lighting in the modern home might be summed up as follows: In the living room, which is today the most important room of the house, being that which its name implies, the room in which we live, the ideal arrangement is this, side brackets for general illumination and table lamps with properly shaded lights for the more direct use of light for work or reading. Should the room be very large, ceiling lights in clusters are desirable.

In lamps, as well as in domes over the dining room table, the most practical arrangement is arrived at by the shade that completely hides the lights, but sheds a clear radiance at the point most needed. In the lamp also is the artistic temperament allowed greater license, and nowhere can more beautiful and artistic lamps be found than in this country, a wealth of design for the person to select from, but always the truly artistic and useful lamp should be the practical one.

Halls and vestibules are artistically lighted by the use of ceiling lights and side brackets, and bedrooms are generally best lighted by placing side brackets nearest to the vantage points, such as dressers, beds and so forth. The bed lamp has now become a decided fixture among electrically lighted homes, and we find some very artistic and interesting types being especially designed for this purpose. Color schemes are harmonized, both in the room decoration and in the lamp or fixture colorings.

One of the most important features of an artistically lighted room is the arrangement of the lighting device in such a manner that the fixture or lamp is not the prominent feature of the room, but so blended with the general color scheme that they are not noticeable, but are just a part of the general scheme. How often an otherwise beautiful home is spoiled by the glaring brilliancy of very ornate and much detailed fixtures or lamps. This is not of necessity due to the expenditure of a large amount of money for the lighting appliances. In fact, the same inartistic results are often obtained by the use of cheap fixtures which are not in sympathy with the surroundings. A little thought and study in selecting lighting effects will result in continued pleasure.

There is one type of lighting which is at present in an experimental stage, but bids fair to revolutionize the accepted standards

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of lighting, and that is indirect lighting, which turns the light toward the ceiling, by which it is reflected all over the room. Very successful results have been obtained in lighting large spaces and public buildings and offices as well as in rooms of houses, and we watch with interest the development for general use of this new type of modern lighting.

Pioneer Oakland Builder Dead

S. F. Morrill, a pioneer building contractor of Oakland, died January 6 at his home in that city. He was 68 years of age, a native of Canada. He entered the contracting business in Oakland about 1865 and supervised the construction of many of the largest buildings of that time.

Will Work Out Heating Problems

Elliott Lee Ellingwood, of Los Angeles, has been appointed by the Los Angeles board of education as heating expert to work out the plans for the heating and ventilating of the new school buildings in conjunction with the architects. This action was taken on recommendation of the building committee, to whom the matter was suggested by Architect A. F. Rosenheim, who is designing the Boyle Heights intermediate school.

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"New Meaning of Good Roads"

UNDER the above caption that staid and conservative publication, the "American Agriculturist," which for more than half a century has supplied the farmers of the country with sound doctrine and carefully pruned information, presents to its readers the following:

"New conditions are here, still newer developments are in sight, that impart a new meaning to the good roads movement.

"The demand for better roads grew out of the necessities of the rural public not only for economy in transportation but to make rural life livable. But now that the self-propelled motor is working a veritable revolution in transportation, the need of better roads is absolutely imperative. The horse-drawn vehicle will profit by this improvement, but proper roads now imply what is to be nothing less than a new era in rural transportation.

"The automobile has become indispensable for pleasure and convenience, but now the motor truck, or auto vehicle for business purposes, is about to have even greater vogue.

"The motor post-coach will soon collect, transport, deliver and bring back parcels and passengers. The motor produce dispatch system is to collect produce from farm to farm, convey it quickly to market, sell the same, make purchases and bring the goods or the money back to the farm. The producer of grain, fruit or other heavy crops will transport same quickly and economically over firm hard highways direct to market, or to the railway shipping point.

"Power applied to farming will go far to solve the help problem, indoors and out. Good roads will make possible many new applications of power to rural industry. Besides oil, gas, coal and wood, electricity is going to be applied to power on the farm, in the home and for motor transportation.

"Movement of both passengers and freight will be conducted over the highway for vastly longer distances and with greater frequency than now seems possible. Yet this will increase, rather than decrease, the tonnage by rail and water.

"Good roads and motor vehicles, together with the vast cheapening of and improvement coming in telegraph and telephone, in the mail and express service, and in existing methods of transportation by rail and water, will bring our whole people closer together.

"Such intercommunication of persons, intelligence and merchandise means more unity between individuals, towns, counties, States, sections. With such closer continuous acquaintanceship come better understanding between people, more confidence in each other, and right conceptions toward varying interests. The result will be a more active patriotism, the abolition of sectionalism and lessening of class antagonism. The golden rule will obtain. The United States will be the healthiest, wealthiest and happiest of nations.

"Well may we say, 'On with the good roads movement!'"

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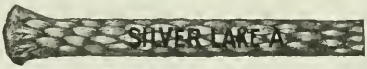

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By the Way

Some Industrial Information Worth the While

An Automobile for Architects

Haines, Jones & Cadbury, with their usual enterprise, have purchased a 1912 five-passenger automobile which is to be used for conveying architects and their clients to their showrooms. The company's chauffeurs will call for the architect at his office or home and after an inspection has been made of the splendid line of fixtures, the busy designer will be whisked back to his office.

Another specialty which Haines, Jones & Cadbury desire to bring to the attention of architects is the Hajoca "Quick" Faucet, which has been designed to eliminate all unnecessary labor in quickly obtaining a full stream of water from the faucet. It is a time saver in that a full stream is obtained by a half-turn of the lever. It has been unqualifiedly approved and adopted by the up-to-date housekeeper.

The Hajoca "Quick" Faucet is anti-splashing, for the water comes through an elongated nozzle, so constructed that there is no possibility of the water splashing; the stream is delivered in a solid column, consequently no particles spatter or scald the user or splash the walls and floor.

The working parts are simple in construction. There is no cap packing to be renewed and the seat washer is "housed in" on the loose disk, which prevents swelling and insures a long life to the washer; thus the stream passage is never obstructed by torn, swollen or flattened washers. The Hajoca "Quick" Faucet works perfectly under all pressures.

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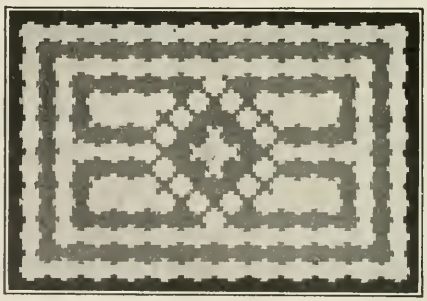

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consumers throughout the country, and this arrangement means that the H. W. Johns-Manville Company will be in position to design and sell lighting systems for every known form of artificial illumination.

The standing of these two respective companies throughout the country, places the stamp of merit on this combination, and undoubtedly all interested in artificial illumination will be benefited by the uniting of these forces, as the Frink Company have been following this particular line of work for the past fifty consecutive years.

An engineering department will be maintained along extensive lines. This department will maintain a corps of engineers throughout the United States and Canada, and be equipped to place data and recommendations in the hands of all interested in any subject pertaining to illumination.

Club House at Larkspur

The Architectural Club of San Francisco, 175 strong, was entertained at Larkspur several Sundays ago by Mr. A. W. Larsen, who escorted them around the town. The club has been looking for a suitable site in Larkspur upon which to erect a magnificent club house, and has practically decided to locate in the home of the meadowlark.

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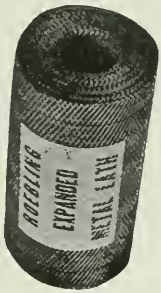

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Santa Cruz Portland Cement Company to Make Pure White Cement

From the Santa Cruz Sentinel.

Another new industry has been added to the Santa Cruz Portland Cement Company, and another natural resource has been developed in the vicinity of Santa Cruz. White cement, used in finishing the outside and inside of buildings, giving a marble effect, is the new discovery over which the local cement company is elated. And they have reason to be elated, for the Santa Cruz works is the only one in all the western section of the United States where it is possible to manufacture such cement, according to discoveries to date. The information is given us by Superintendent F. H. Davis of the Santa Cruz Portland Cement Company. White cement now sells in the San Francisco market at $7 a barrel, where ordinary cement sells at a price ranging from but $2 to $2.50 a barrel.

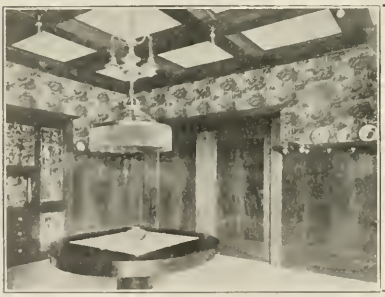
Mr. Davis says that his company has been carrying on experiments for some time past, and with most gratifying results, for the manufacture of white finishing cement has now passed the experimental stage with them, and their output is equal to the best Eastern product.

In two weeks the Santa Cruz Portland Cement Company will begin manufacturing this new product for the market in real earnest, and they expect to manufacture 20,000 barrels the first month.

Take Down Town Offices

The Pacific Blower and Heating Company, one of the oldest and most dependable heating firms in San Francisco, has taken down town offices in the Monadnock building. This brings the company in close touch with architects, and its consulting staff may be reached more quickly now than when the headquarters were on Seventeenth street. The factory and salesrooms, however, are still maintained at the old stand.

The Pacific Blower and Heating Company has enjoyed its share of out-of-town business the past year, having installed either steam or furnace heating plants in many of the largest school houses, banks and churches, from San Francisco south to Madera, and north to Ashland, Oregon. Some of the more important installations were the Visalia high school, two schools at Turlock, high schools at Exeter, Williams and Pacific Grove, and grammar schools at Princeton, Ashland, Oregon; Patterson, Tamalpais, and the Webster school, now under construction at Stockton.



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Where to Buy the Kitchen Equipment

The John G. ILs Company have recently taken the contract to supply all the kitchen equipment for the new Catholic Orphanage now being completed in San Francisco and which was designed by Architect Smith O'Brien. The contract amounts to more than $2,000.

The John G. ILs Company are pioneers in the kitchen utensil line in San Francisco and when an architect or owner wishes to install a modern equipment of cooking paraphernalia—be it in a hotel, hospital or residence—they go to ILs. The goods carried by this firm are the very best the market produces and the prices are right. Experienced help is employed to insure satisfactory installation of every equipment, both large and small. The John G. ILs Company headquarters are at 855 Mission, between Fourth and Fifth streets, San Francisco.

Holmes Lime Company Busy

W. S. McLean, of the Holmes Lime Company, San Francisco, says: "Our trade in Diamond finishing lime holds steady, keeping fully up to our supply and taking all of our output of this material, which is the highest priced barrel lime in this market. Our trade in brick lime has been moderate, owing to the quietness in this line of work during the rainy months. Our Vigorite brand of hydrated lime is quite active at this time, being in good demand for soil fertilization, as well as for waterproofing concrete. Our trade in Ione, Cal., fire brick and clay has increased in the last two months. Our Portland cement business has been only moderate of late, owing largely to the fluctuating prices and unsettled market conditions, as well as the natural quietness of demand in the winter months. Our plaster trade at present is quite active. In addition to supplying United States government buildings on Angel Island, we are supplying all the plaster for the new Bankers' Investment building on Market street, the plastering in which is being done by Smythe Bros."

New California State Buildings

Plans for the construction of State buildings to be erected in various parts of California at an aggregate cost of nearly a million dollars are nearing completion in the office of the state engineer, Sacramento. One of the largest of these enterprises is the proposed armory building to be erected in Agricultural Park, Los Angeles. The plans provide for a three-story and basement Class A building, of reinforced concrete construction. It will be absolutely fireproof, and will have an exterior facing of repressed brick and terra cotta, and a roof of tile and tar and gravel composition. It will have a large drill room, officers quarters finished with every convenience, barracks, and departments for every branch of the service. An appropriation of $250,000 has been made for the cost of construction.

Similar in design to the Los Angeles structure is the armory building to be erected at the corner of Fourteenth and Mission streets, San Francisco. It will also be built of reinforced concrete, with structural steel and iron, composition roof, and granite and pressed brick exterior. The interior finish will be of pine and metal, and there will be a large amount of ornamental iron work, marble and tile decoration, elevators, vacuum cleaner and furnace. The cost will be $350,000.

The third of the group of armory buildings is to be constructed in Sacramento at the corner of Twelfth and W streets. It will be three stories with a full basement, and will be built of reinforced concrete with pressed brick and terra cotta exterior. It will have Oregon pine interior finish, hardwood floors, iron and steel frame, tile and marble work, steam heating plant, elevators, oil burning furnace, and vacuum cleaning plant.

Chief among the smaller State buildings for which plans are being prepared

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is the two-story and basement dormitory for nurses and attendants at the State asylum at Agnew. It will be built of reinforced concrete, with structural steel and iron, and finished cement exterior facing. It will contain parlors and sitting-rooms on the first floor and a library and music room. The second floor will contain bedrooms and baths, with pine floors and finish, lavatories, steam heat, vacuum cleaning system, and electric fixtures. The cost will be $60,000.

A two-story reinforced concrete training school for teachers is being built at the State Normal school at San Jose. It will be 100 x 100 feet, with a full basement, and composition roof. It will contain classrooms, offices, lavatories and toilets, and will have maple floors, pine trim, tile floors in the halls, skylights, and modern heating and ventilating systems. It will cost $60,000.

A two-story and basement dining hall to be erected by convict labor is to be built at the San Quentin prison. It will be of reinforced concrete, and will cost $100,000. A barn of the same construction will be built at a cost of $25,000. Domestic cement will be used in all the work, and State products will be specified as far as possible.

New Cement Directory

We have received a copy of the 1912 edition of the Cement Directory, a handy little volume containing vital information, issued by the "Cement Era" of Chicago. The book bears evidence of very careful preparation, containing a complete list of all the cement companies operating, together with a list of all the principal officers of each, and the location of the plant and the capactiy of the plant, in each case. The publishers are to be congratulated on the completeness of the work and it should stand as an authority on the list of producers.

"The Invincible" Vacuum Cleaner

This stationary vacuum cleaner, for which R. W. Foyle, 146 New Montgomery street, San Francisco, is the Pacific Coast agent, works on the centrifugal fan principle and is a leading type of the Low vacuum system showing its highest efficiency on full loads. The claim is made that with the same efficiency a saving of 25 per cent can be secured over machines of the high vacuum type. A 10-horsepower cleaner has been installed in the Los Angeles Post Office building, which was awarded the contract over all competitors and has stood the most rigid tests in practical operation by the government's engineers.

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Civic Center Plans

The first actual physical work for San Francisco's new city hall has been started. Borings made through the foundations on the old city hall site under the direction of Architects Howard, Meyer and Reid, were entirely satisfactory. The test gave the assurance that the new hall can be built on the site wtih perfect confidence that no difficulties will be met with in regard to the foundation.

The architects have the plans well in hand and no time will be lost in laying out the civic center after the bond issue election, March 28.

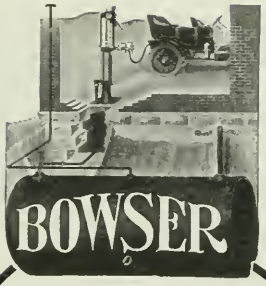
The proposed civic center, with the parking of squares between the city hall and Van Ness avenue between McAllister street and Hayes will open up a vista to the hall from the south and west, making it one of the show places of the world. Few of the world's capitals have such an approach and such a parked area as will front the city hall when it and the civic center are completed. Work for a large number of men will be provided, not only in building the structure, but in preparing the areas around it and in the construction of the auditorium and the other buildings to group about the center.

Bay State Brick and Cement Coating

Bay State Brick and Cement Coating is a protection for concrete and stucco that has been tried under all sorts of conditions and has met all the requirements. Years before anybody else made a coating for concrete or stucco this coating was an established success. Bay State has no oil in it and you can't burn it. It will keep out moisture and save concrete from cracking. You can use it as a floor tint on concrete or wood, or a wall decoration. It has a dull tone and you can use it on a private house or on a factory floor or on a factory wall, in rooms that are damp or in rooms that are dry, and it does not destroy the distinctive texture of concrete. Write and let the manufacturers send you Booklet No. 2 that gives you a list of the houses of concrete and stucco and other constructive work upon which this coating has been applied. Address Wadsworth, Howland & Co., Inc., 82-84 Washington street, Boston, or the San Francisco distributors, R. N. Naison & Co.

Will Assist Highway Commission

Clarence B. Osborn, of Los Angeles, a brother of R. G. Osborn, cement tester, has been appointed chief geologist by the California State Highway Commission, and it will be up to Mr. Osborn to determine the quality of rocks to be used from accessible quarries along the routes of the $18,000,000 state good roads system, and also pass upon geological formations for road foundations, etc.



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Los Angeles Engineers and Architects

The Engineers' and Architects' Association held their regular monthly meeting early in March at the Hollenbeck Cafe. The principal topic of the evening was an address by Col. J. A. Ockerson, president of the American Society of Civil Engineers, who is also engineer for the protection of lands and property in the Imperial Valley, under the direction of the United States Department of the Interior, on "The Delta of the Colorado River." It was illustrated by maps and photographs thrown on a screen by means of the reflectograph.

San Francisco Firm Opens Branch in Los Angeles

Mr. Wm. C. McTarnahan, vice-president of the Fess System Company of San Francisco, has opened a branch of his firm at 609 South Spring street, Los Angeles. The Fess System Company are the sole manufacturers and patentees of the noted Fess System Rotary Crude Oil Burner.

The invention of this machine is conceded by many of the noted architects and engineers through the State to be a revelation in the burning of crude oil, inasmuch as it burns fuel oil as low as fourteen gravity, without the aid of compressed air or steam for atomization, and develops instantly after lighting, a clean, smokeless and noiseless fire which is equally distributed over the entire area of the heating surface.

The operating cost of the machine is so low that it is practical to install in boilers as small as four or five hundred feet of radiation.

The Fess System manufacture their own machines completely, and make them in sizes to fire from an ordinary tank heater to a large power plant.

New Building of the Los Angeles Athletic Club

One of the finest structures of its kind in the State is the new building of the Los Angeles Athletic Club, at the corner of Seventh and Olive streets, Los Angeles, recently built from the plans of Architects Parkinson and Bergstrom. This building, a large structure of brick and terra cotta, is finished throughout with the Glidden Varnish Company's products, distributed by the Whittier-Coburn Company of San Francisco and Los Angeles, which is the Pacific Coast agency for their material. All the exposed metal work is coated with Glidden's liquid cement or cement enamel over acid-proof coating, a preservative for iron and steel that absolutely prevents corrosion, flaking off of succeeding coats of paint or enamel used on railings, etc. Among the finishes used in the building may be mentioned the following: For the walls and ceilings of the halls and sleeping-rooms, Glidden's waterproof flat wall finish over Glidden's alkali-proof wall size, which produces the very best result in the modern washable coatings. Where extremely hard and durable wall finish was necessary, in the rooms devoted to the handball courts, gymnasium, swimming pool, kitchens, locker rooms, etc., the Glidden cement enamel over the alkali-proof wall size has given the result desired, and this finish in colors, as tinted, presents a beautiful appearance, with the pure white superior enamel on the ceilings. The floors are coated with Glidden's concrete floor dressing, which is especially intended for the maintenance of concrete floors, protecting them from abrasion and wear, the natural consequence of which is dust formation; also protection from the absorption of moisture, oil, grease and disease germs. This material knits down close to the surface, forming a hard coating, which becomes integral with the concrete. The interior wood trim, throughout the two floors of bedrooms and other departments, is finished with Glidden's velvet white enamel, blending beautifully with the color scheme, completed with figured carpets, blinds and hangings, in perfect harmony with the colors of walls and ceilings. This work of painting and decorating is indeed one of great credit to the contractors, Messrs. Horgan and Clark of Los Angeles, who are receiving many compliments on their workmanship and talent displayed in the finishing of this fine new clubhouse.

To Tunnel Twin Peaks

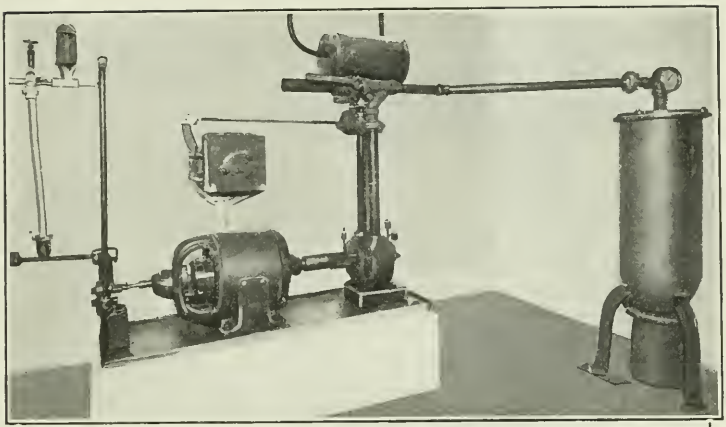
Defintie steps have been taken to tunnel Twin Peaks, which will have the effect of developing the splendid residence properties south of that mountain in San Francisco. A special election calling for a bond issue of $2,500,000, to carry out the tunnel project has been requested of the supervisors.

A plan to build the tunnel by private enterprise was discarded as inadvisable, as it would make the bore exclusively a railroad right of way for a long term of years. No private capital could be interested in the big undertaking with the limited franchise allowed under the charter.

The reasons given for the adoption of the municipal bond plan were:

"The tunnel will benefit directly every citizen of San Francisco in proportion to the amount of property he owns, the amount of business he transacts and the amount of traveling he does. Therefore, it is right and proper that every citizen should be interested in the construction and control of an improvement of such broad public character."

The lowest estimate for the construction of the tunnel—7,200 feet long—is



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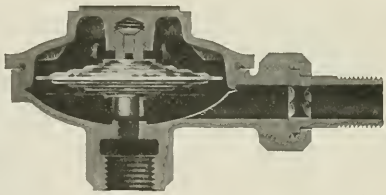

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$274 a lineal foot, or $1,992,800 for the project. The highest estimate received was $336 a lineal foot, or a total cost of $2,419,200.

Including the cost of approaches and opening street connections, it is estimated by the committee that the tunnel can be constructed in its entirety for $2,300,000.

Other tunnel projects that will be considered by the ways and means committee are the Broadway, Montgomery, Folsom, Potrero and Stockton street tunnels, and a tunnel from Mission and Crescent streets to Silver and Cambridge streets.

Arthur G. Scholz, an architect, has also drawn plans for a Twin Peaks tunnel. His scheme calls for a two-story tunnel, the upper to be used for pedestrians, and an elaborate approach, with a park, cafe and elevators to reach the upper tunnel.

Sensible Roofing Ordinance

Editor the Architect and Engineer:

The recently amended section of the local building laws relating to "Roof Covering," permits all classes of buildings to be roofed with four-ply 14-pound felt and gravel roofs, with the proviso that within the fire limits such four-ply roofs shall be laid over an unsaturated dry sheet where wood sheathing is used.

This is the most sensible roofing ordinance we have ever had. It permits a cheaper roof covering in the residence district, and compels the use of an unsaturated dry sheet on Class C buildings within the fire limits. This unsaturated dry sheet will stop the excess asphaltum dripping through in loft buildings, and result in a much longer serviced roof than where five saturated plys are used.

A draft of specification for Class C buildings is given herewith:

"All roof surfaces shall be covered with four layers of saturated roofing felt weighing not less than fourteen pounds each per 100 square feet, shingled on to comply with the pitch of the roof, each ply being cemented to the preceding layer with a heavy coat of refined asphaltum. These four layers of saturated felt shall be laid over a dry sheet of unsaturated felt or red rosin-sized paper, and all felt shall be turned up at walls and openings not less than six inches,

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reinforced with a thickness of flax felt mopped solid in the angle and counter-flashed 24-gauge galvanized iron well secured and cemented in place. All outlets shall be of 24-gauge galvanized iron, fitted with screens of one-quarter inch mesh.

"The entire surface shall then be given a flowing coat of asphaltum in which shall be embedded clean, screened gravel of sufficient quantity to thoroughly cover the surface."

HARRY LARKIN.

Nine-Story Hotel for Long Beach

Architect H. M. Patterson of Los Angeles has completed plans for a nine-story reinforced concrete store and apartment building to be erected at Long Beach for the United States Trust Company, 206 Mercantile Place, Los Angeles. W. L. Porterfield is the prime mover in the project.

The building will occupy a site 275 x 78 feet, adjoining the municipal pier on the west and just south of the Salt Lake depot. All of this site will be occupied by a building practically nine stories in height, except a portion about 40 x 72 feet, which will be four stories in height. The main building will extend beyond the "pike" and provision will be made for a walk 35 feet in width through the first story. There will be 28 stores on this floor, arranged in arcades. There will also be a laundry, boiler, engine and dynamo rooms, shower baths and dressing-rooms for men and women, and toilets. The stores will have cement floors, plate glass windows, prismatic and art glass transoms.

The second floor will contain a dining-room and grillroom 124 x 76 feet, private dining-rooms, kitchen, service room, bakery, barber shop, billiard room, storage and servants' rooms. The principal rooms will have hardwood finish and floors.

The third floor, which will be on a level with the pier, will contain 15 large stores, hotel lobby 37 x 78 feet, reading-room, parlor, 30 x 45 feet, general offices, manager's office, and telephone rooms. The interior finish will be in mahogany, and the floors of hardwood and mosaic tile. The third floor of the small building will be fitted up as a theater, 40 x 72 feet.

The next five floors will be for hotel purposes. There will be sixty rooms on each floor.

The building is estimated to cost about $350,000. The construction will be of reinforced concrete with the exterior of the first three floors faced with Faience tile, and the remainder treated with a white cement coating with cast cement ornamentation. There will be two passenger elevators and one freight elevator.

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Notice to Architects.

The Architect and Engineer receives many inquiries from draftsmen in search of employment. We keep the addresses of all applicants and will be pleased at any time to furnish the names to architects in need of help.

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Some Court Decisions of Interest to Architects and Contractors

LIABILITY OF AN EMPLOYER FOR INJURY CAUSED BY A CONCURRENT NEGLIGENCE

An employer is liable to a workman for injury resulting from failure to provide a safe place to work, though concurrent negligence of the injured employe's fellow workmen contributed to the injury. (United States Circuit Court of Appeals, Sixth Circuit, Bryson vs. Gallo, 180 Federal Reporter, 70.)

PERSONS NOT ENTITLED TO MECHANIC'S LIEN

Where one furnishes completed articles for a building in course of erection, such as cut and fitted stones, without performing any actual work in constructing the building, his employes cannot enforce a mechanic's lien against it for their labor in preparing the articles. (Maine Supreme Judicial Court, Munroe vs. Clark, 77 Atlantic Reporter, 696.)

LEGAL RIGHTS OF ORGANIZED WORKMEN

While workingmen have a legal right to unite to protect themselves, and to strike peaceably on account of any just grievance, they have no right to threaten owners, builders and architects that their building operations under existing contracts will be held up if they, or any of their sub-contractors, use product of a particular employing concern. Injunction will be granted, restraining individual union members from calling out employes in other trades who have no grievance against their employers, and from notifying owners, builders and architects that they are likely to have their operations suspended if they use plaintiff's products in the work. (United States Circuit Court, Southern District of New York, Irving vs. Joint District Council of New York and Vicinity of the United Brotherhood of Carpenters and Joiners of America and others, 180 Federal Reporter, 896.)

REDUCTION FOR INCOMPLETE CONTRACT WORK

An owner of a building is entitled to a deduction of an amount sufficient to complete a building strictly according to the contract, though the work has been substantially completed in all important particulars. (New Jersey Supreme Court, Poerter Screen Manufacturing Company vs. United Contractors' Corporation, 77 Atlantic Reporter, 473.)

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Architect Sylvain Schnaittacher, of San Francisco, has been commissioned to prepare plans for a three-story addition to the Paraffine Paint Company building at First and Stevenson streets. The addition has been made necessary by the steady increase in business of this well known firm. Its P. & B. building paper is known to architects and contractors all over the Coast, and is used by them extensively. The additional three floors will be arranged for lofts and offices. The present building is two stories, and was built soon after the fire. The addition will have a steel frame.

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Announcement

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The company, accordingly, has incorporated under the name of Fibrestone and Roofing Company of San Francisco, the stockholders of which are the former members of the co-partnership known as Ford & Malott, which firm has transferred all its materials, contracts, outstanding accounts, good will and assets of every description to the Fibrestone and Roofing Company.

The corporation has taken over the entire business and will continue to conduct it on the same broad lines as heretofore, and has assumed all liabilities, obligations and guarantees of Ford & Malott, and the co-partnership of Ford & Malott has been dissolved.

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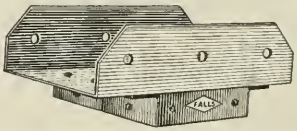

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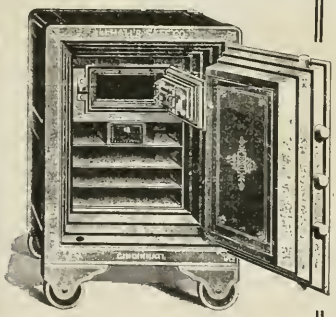

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Pacific Coast States

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The Architect and Engineer,
April, 1912.

COLUMBIA HOSPITAL BUILDING, LOS ANGELES, CALIFORNIA
Norman F. Marsh, Architect

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THE
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Pacific Coast States

VOL. XXVIII. APRIL, 1912. NO. 3.

View of the Business Center of San Francisco, Taken Especially for The Architect and Engineer, by Gabriel Moulin

Rationalism of the Twentieth Century Architecture*

By G. ALBERT LANSBURGH, Architect.

RATIONALISM is the formation of ideas produced by reasoning, and depending alone upon logic for its support. Rationalism in architecture is the logical expression of a correct and practical solution, and depends also upon correctness in the aesthetic requirements of the design and correctness in the methods of their construction. Rationalism is a characteristic of any true art, and is a highly developed feature of twentieth century architecture.

In architecture rationalism is that element in the human mind that must bring to an ideal culmination the successful union of the aesthetic and constructive, and these two elements are the principal elements that can give a logical solution to the great architectural problems of the day.

The art of architecture has always been composed of two great principles—the aesthetic and constructive. When these two features have been the simultaneous outgrowth of a developed sense of refinement and a highly scientific knowledge, they have produced an ideal architecture. As an example of this, what more successful treatment is there than the blank side and rear walls of the Pantheon in Paris, whose beautifully studied stone joints are its sole decoration.

Let us analyze these two great elements:

The aesthetic itself is composed of three minor elements, namely—(1) composition (grouping or arrangement, and proportion); (2) character, and (3) detail.

*Paper read at the second annual convention of the Architectural League of the Pacific Coast, held in Los Angeles, April 9-10. At the business session the following officers were elected: President, Ellis F. Lawrence, Portland; vice-president, John Bakewell, Jr., San Francisco; secretary, J. C. Whitehouse, Portland; treasurer, Myron Hunt, Los Angeles.

The constructive element is secondary, and is a means to the end. This has always been the case, and is especially so today, because of the great complexity of the problems with which the architect has to cope, hence the increased importance of this secondary element.

There is no art that so fully and absolutely indicates what the human problems are and how they have been solved as does this art of architecture, for every monument, that is, every successful monument, tells its tale and leaves to the history of the world an indelible phrase for the great architects of the future to read and understand, and thereby know their past.

As compared with the problems of the past ages, the problems of today are vastly complex. For example, let us compare the simplicity of the antique monument with that of the monuments of the middle ages, and those of the middle ages with those of today. Some of you may say, "But the middle ages were dark ages," and therefore the art of simplicity was lost, but let me add here, that architecturally speaking, there was never a dark age. The Renaissance is nothing more than a period of survival in architecture, rather than a period of revival.

Admitting that rationalism has always, more or less, been a feature of the different styles and periods of architecture, especially so is rationalism the dominant feature today, because, in almost every country of Europe and America where the present decade is making such vast strides in the development of a new architecture, although localizing its character to the needs of the respective inhabitants, there is a tendency to, in a measure, adapt all styles and all periods, to a new and economical method of construction.

In the past, however, and up to the time of the steel skeleton, styles have been formed more or less, upon the true stereotomic principles that have been developed throughout the long ages, from the early post and lintel principle of the Egyptians, down to the most complex geomteric problems of the French designers.

Now, in speaking of styles, let me define what is "style" in architecture and what is "period." A style in architecture is created by the fundamental principle of construction, characterized by its adaptation to a distinct characteristic aesthetic line. The antique styles have been created by the constructive principle of the post and lintel or straight line. They may be divided into innumerable "periods," such as the Greek period, the Egyptian period, etc. The Roman style has been characterized by the arch or semicircle. It, likewise, has its different periods. The Romanesque is really nothing more than an extremely decadent period of this style. The constructive principle of the so-called Gothic style, is the Lancet arch, or two arcs of circles. This style is divided into several periods, such as the "Flamboyant," the "Perpendicular," etc. The Renaissance has for its distinctive construtive line the ellipse, and its divisions are nothing more than historic periods, named according to the epoch or the king under whom it was produced. The dominant principle of construction today is the elongated pier. This has been combined with the lintel, the arch, the lancet and the ellipse. Imagine, therefore, the complexity of the problem that now confronts the creators of this new style of the twentieth century, and this required rationalism to be perfected.

All the past styles have been more or less analogous with a country and limited within a certain clearly defined period of years. This present style, or the Rationalistic, is characteristic of America, solely because of the steel skeleton as a new element of construction having been born and being highly developed on American soil.

The twentieth century era in art has shown us in America that every style of the aesthetic is at least attempted in its adaptation to the great constructive principle that the Occident is supposed to have initiated. It is therefore evident that although the constructive element is well defined, the aesthetic is not yet determined, and the twentieth century or Rational style will not become distinctive until these two elements are simultaneously developed and harmoniously wedded. Then will it give to the history of art its beautiful offspring.

It is only the element of rationalism that can produce ideal twentieth century architecture, and undoubtedly that twentieth century architecture will in the future be known as "American." It is only now that the American architect has been able to attempt to create for himself and his country a distinctive architecture. I will admit that up to the present time this architecture has not yet blossomed forth, but its buds are fast making their appearance upon the great architectural tree of the Occident, and at the rate we are now progressing will in no very distant future have blossomed forth into a beautiful maturity, or at least into a healthy youth.

The stereotomic requirements of the past are no longer a principle of the present, and when I speak of the present I am speaking of the American architecture. The steel skeleton has changed the "poché," or the expression of the plan. Where huge masses of stone were required for the expansion of pressure upon the bases of support, the steel frame has minimized this "poché," and the character of the plans will necessarily be judged by the rational expression of the two great elements of design, the aesthetic and constructive, harmoniously combined.

The stereotomic indication of stone joints, etc., in stucco or brick, or of stone ashler, which is hung upon a steel frame, is an architectural lie, since it gives the impression of being self-supporting. These faults, when obliterated, will develop the required aesthetic.

We are all too apt to copy from the past instead of inspiring ourselves from the successes of antiquity in order to create. By blindly helping ourselves to fragments from this or that masterpiece, we will never produce more than a "potpourri." We will never create or evolve a style by this tendency. Did Greece borrow from Egypt, or did she inspire herself? Did Rome borrow from Greece, or did she ask instruction? Did France in the Gothic period borrow from decadent Rome, or in the Renaissance period help herself to Italian fragments? No, these styles were all of them logically evolved by studious and continued efforts refined by inspirations, if you will, but decidedly not by plagiarism. We likewise must thoughtfully and studiously strive to attain our goal, and we likewise may seek inspiration from the glories of the past.

The masters of the great schools of the world are today teaching a local expression of requirements and their rational solution. We do not today speak of a period in our present architecture, although most of us have become slaves to a particular period or expression that may be adapted to the American needs. But these periods of style, unless they can be rationally expressed in the construction of today, are wrong in principle, and as such are condemned by the great modern teachers.

Fads have always been prevalent, and fads have always caused the birth of the embryo of a style. American architecture is at present full of fads. Although most of them are faulty, there are some that are bound to develop the so-called "Twentieth Century Embryo," viz., the elongated pier, the disproportionate cornice, etc. Although at present called a fad,

this fad is nothing more or less than an attempt to connect frankly the method of construction with the aesthetic, as at present understood and as logically arranged as it may be possible to reconcile a foreign or exotic style with the ultra occidental construction.

One of our great problems is nothing more nor less than the principle of clothing the skeleton with a suitable gown in the form of an agreeable and attractive protection against the elements.

Another fad that seems to have crept into our very recent architecture is the excessive use of columns. Puerile simplicity in design, devoid of a mature thought—an absolute lack of one of the principal elements of the aesthetic—viz., character, has marked the "projects" of most competitors of the last few years.

Let us decry this tendency to accept as a successful simplicity nothing more nor less than an affected and sought-for banality. A beautiful simplicity is the outgrowth of a successful and logical design. It has never been created by being sought for. It comes of itself. It is the natural result of success.

As to the second failure of American designs of late, let us consider that all-important requirement, character. Character has never been successfully indicated by any other methods than logic and a refined expression, an understanding of the problem at hand. Today we see museums, temples of justice, court-houses, auditoriums and educational buildings, all of them nothing but a plain classical colonnade, and when I say "classical" I must apologize to those great ancients, because as a rule there has been an exceedingly marked discrepancy in proportion. Occasionally we may see a colonnade broken by a pavilion at the center; at other times there may be pavilions at the extremities, and still again there may be pavilions at both the center and the extremities. But it seems that the real architectonic use of material, the treatment of plain surfaces decorated only by their stereotomic indication of construction, has been cast aside. Why? Because it is much more difficult to design by using these elements than by borrowing from the classical past; more difficult to create than to plagiarize.

Now, there can be no doubt as to which tendency we are to accept in order to reach our goal. There is but one choice between plagiarism and rationalism. "Rationalism" is to be our guiding power, for rationalism alone can mould these elements, the aesthetic and constructive, into a great and lasting twentieth century American architecture.

* * *

An (Im) Pertinent Inquiry

President Charles C. Moore of the Panama-Pacific Exposition reports most encouraging progress for the month just completed.

Eight Governors were entertained at banquets and shown the beauties of our city; four conventions were addressed on "The Future of San Francisco and the Pacific Coast;" a society was formed for the cultivation of the California Poppy; a set of "Rules for Exhibitors" was formulated and adopted; a scouting party was organized for cleaning up Mt. Tamalpais by removing all tin cans and discarded lunch boxes; resolutions were adopted endorsing President Taft for his help in "getting us the Fair;" and information collected and printed for guidance of intending foreign exhibitors as to "Collection of Customs in 1915." Another assessment was levied on the stockholders.

BUT, Mr. Moore, and please excuse the question—

When is Construction work to begin?

Sloat Boulevard Pumping Station, San Francisco
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The Cement Gun

The much talked about Cement Gun has reached the Pacific Coast and has already been used with splendid results in a number of instances. The name is not descriptive—in other words it is not a cannon or rifle as some uninformed contractors are wont to believe — Cement Gun is simply a new name for a new process of handling cement mortar. The gun is in itself a fine mixer of cement mortar, and when in operation all surplus water and air is expelled, leaving a high quality product never before attained by hand or any other machine process. The gun is especially applicable for plastering exterior surfaces, be they wood, brick or concrete. The dry materials are forced through a hose by means of compressed air, hydrated at the nozzle, and applied with a muzzle velocity equal to a pressure head of 25 pounds. The combination of the elements, cement, sand and water, necessary to produce the plaster material, takes place in transit. One man can operate the nozzle which throws the Gunite to any point that the nozzle is aimed, in much the same manner as a sand-blasting machine. A complete description of the Gun will be found in the following pages.—Editor.

By O. P. SHELLEY, Jun. Mem. Am. Soc. C. E.

FOR some years past concrete made from hydraulic cement has been one of the most important factors in structures of every kind, and as the endeavor has been made to keep mechanical appliances for the handling of cement products abreast of the times, it is only to be expected that some of these appliances will embody principles extremely valuable commercially as well as theoretically correct.

The solution of one of the most serious problems in connection with cement work came with the discovery, or rather the development, of the Cement Gun.

Strange to relate, the apparatus was not invented by an engineer or a cement worker, or even a contractor or builder. It was originally conceived by Mr. C. F. Akeley, a distinguished naturalist of the Field Columbian Museum, Chicago. His idea for the use of the Cement Gun was to rapidly and economically build up forms over which the skins of the larger mammals such as elephants and hippopotami might be stretched.

Mr. Akeley was also a member of the Field Museum Committee and had charge of the remodeling and preserving of one of the old World's Fair buildings in Jackson Park, Chicago, that had been given to the Field Museum Association. An appropriation of about twenty thousand dollars had been made to carry out the necessary repairs on the building before being used by the Association for its exhibition purposes.

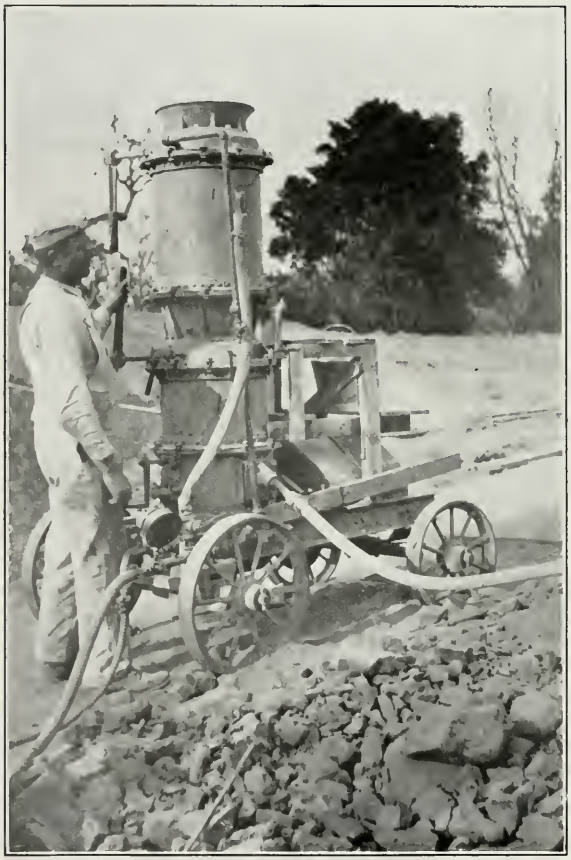


Photo of the Cement Gun as It Appears Ready for Operation

Mr. Akeley conceived the brilliant idea of enlarging the Cement Gun and then covering the entire building with stucco work by means of it. The experiment was highly successful and the work was performed rapidly, and well within the appropriation.

This was the first practical work done by the Cement Gun, and its possibilities were thereby demonstrated. The apparatus was then studied in the laboratory and subjected to various practical tests. At the same time different types of "Guns" were designed and numerous mechanical changes made as experiments showed the necessity.

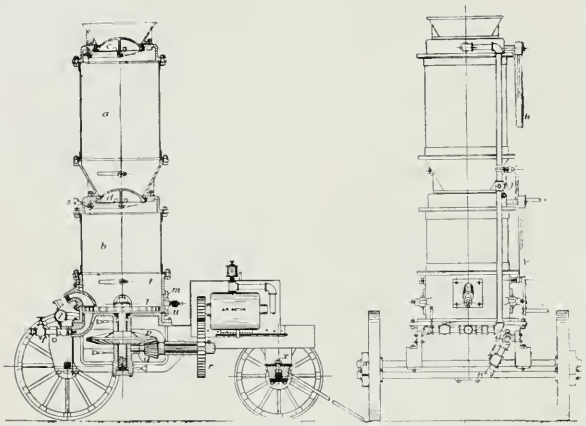
As a machine the Cement Gun is extremely simple and consists essentially of a feed hopper always under air pressure, which latter forces the sand and cement through the outlet hose to a specially constructed nozzle, at which point water first touches the sand and cement mixture, being introduced through a separate hose to this nozzle (See Fig. 1 and explanation). The air pressure projects the now damp sand and cement mortar from the nozzle with a very considerable force, the material being literally "shot" into place; however the "Cement Gun" is a gun in name only, as the discharge is continuous and not intermittent, as in all "guns," and to the resulting product has been given the name of "Gunite," to distinguish it from the old hand-applied "Stucco."

In the Cement-Gun process, the dry materials are forced through the hose by means of compressed air, hydrated at the nozzle, and applied with a muzzle velocity corresponding to a pressure head of 25 pounds. The combination of the elements, cement, sand and water, necessary to produce the plastic material takes place in transit and they are not disturbed after being placed. It is a well-known chemical fact that the instant water is brought into contact with cement, the initial set, or chemical combination begins. The initial set must be looked upon as the commencement of that hardening which gives the final strength to the mass. Hence, subsequent manipulation or handling tends to disturb this initial set, and consequently must weaken the product. These objectionable features are entirely overcome by the Cement-Gun process—the hydration taking place in transit, immediately before and during displacement; the chemical combination or initial set takes place where it belongs, i. e., in its final resting place, and not on the mixing board.

The Cement Gun employs only the amount of water actually necessary for the hydration of the cement, and, by reason of the materials being applied with considerable force, all surplus water and air are expelled.

The resulting product is of a quality never before attained by hand or any other machine process, being a non-porous, non-cracking, impermeable mass possessing the maximum density, as no excess water can remain in the mortar, to later cause voids; neither is it possible for the finest particles of the cement to begin to set before the mortar is in final place.

It is reasonable to infer, in the absence of evidence to the contrary, that when a batch of cement mortar or concrete is gauged with water, that a certain proportion of the minute particles of the cement will set, lose elasticity and the power to bond other materials in advance of the bulk of cement used in the entire mass. If this occurs before the mortar or concrete is in place, the result must be a loss of ultimate strength proportionate to the percentage of particles whose powers of adhesion have been thus prematurely lost.



Cross Section of Cement Gun

Dry mixed material placed in cylinder "a." Valve "c" closed and air pressure equalized in cylinders "a" and "b." Valve "d" opened and material drops into lower cylinder "b." The process is then repeated. The feed wheel "s" is revolved by an air motor through the gears "r" and "p." Compressed air admitted through valve "f" blows the material upward and out through the goose-neck shown above the air-pressure gauge into a flexible hose.

As will be shown later, experiments have proved that when cement mortar is tempered with water at the instant that it is deposited in place, the strength of the mortar is greatly increased. This increase in strength is due to more perfect mixing, to the elimination of loss by the premature setting of a considerable portion of the particles of the cement, and to the greater density of "gun" placed mortar.

Some of the conditions which have acted to restrict the use and development of concrete may be summed up as follows:

First: The difficulty of securing a sufficient uniform mixture to produce a homogeneous mass.

Second: The difficulty of applying thin layers of cement mortar of any but the richest mixtures on ceilings or walls unless supported by forms.

Third: The necessity of employing costly forms or molds to hold the material and give it shape until it is sufficiently strong to bear its own weight.

Fourth: The porosity of the finished mass. Porosity means the presence of pores or voids—in other words, porosity is the opposite of density; a porous mass is not dense. These voids may be caused by the use of too great a proportion of water, careless tamping or by the use of sand and stone improperly graded. Excessive porosity not only weakens the finished work to an unknown and undeterminable degree, but effects the durability of the work by admitting moisture, which may decompose the cement and corrode the iron or steel used for re-enforcement. A mass of concrete may, because of its porosity, be weakened and eventually disintegrated by water.

Fifth: Permeability, the quality or condition which allows water to pass through the mass, is closely allied to porosity. Because of the permeability of concrete masses, it is often necessary to employ various methods of waterproofing, or to adopt other more expensive materials. Were

Frame House Before Treatment With the Cement Gun

The Same House After Receiving a Coat of "Gunite"

Residence of Mr. Mortimer Fleishhacker, Redwood City, California, After Being Treated With "Gunite"

it possible to cheaply and with certainty overcome this defect, Hydraulic Cement Concrete would be more universally used. When concrete is laid in exposed positions where it is subjected to the action of frost, gradual disintegration may take place, and when the concrete mass under such conditions is excessively porous, total destruction may follow. Even when concrete is used in positions where impermeability, or waterproof qualities are apparently unimportant, the fact remains that masses of concrete of a very porous nature are far more liable to surface cracking and gradual disintegration than would otherwise be the case.

Sixth: Cement grout, or a liquid mortar made from cement and sand thin enough to flow, is of necessity employed to a certain extent where cavities exist which cannot be otherwise filled. The value and strength of the aggregate thus formed is, however, very questionable, for when such thin mixtures are used, the sand content settles to the bottom, and the cement remains above, with the result that that portion of the aggregate that may be composed of sand is of little value.

The Cement Gun has been used on a number of engineering projects very successfully, probably the most prominent place being the Panama Canal. Here it was employed to coat the disintegrating rock of the Culebra cut with concrete. A more complete description of this work and the reason for it being done is described in the "Canal Record" of July 5th, 1911, as follows:

"A test of the Cement Gun as a means of coating the surface of rock in Culebra Cut to prevent disintegration is in progress. The so-called 'Gun' is a compressed air apparatus for forcing cement and sand from a tank through a nozzle, at the mouth of which water is mixed with these materials, forming a concrete which is cast upon the surface to be coated with such force as to become part of the rock itself.

"For the work in Culebra Cut, the apparatus is mounted on a flat car, at one end of which is a bin for mixing the sand and cement. One day's supply is carried, or enough to coat 200 square yards with a layer one inch thick, in nine hours of work. The car was rigged up at Empire shops, and the machine was tested by allowing it to coat a boiler with asbestos. Five men are required in operating the plant, their work including mixing and delivering the materials, and operating the Gun.

"The first work to be undertaken is coating the surface of the soft rock which the excavation has uncovered on Contractors' Hill. This soft rock is a fine grained clay transported and deposited by water, moderately hard when first exposed, but crumbling rapidly when in contact with the air. Of it, the chief geologist of the United States Geogological Survey said in his report of November 15th, 1910.

"Under certain conditions, this surface disintegration becomes a more serious matter. For example, the contract between the intrusive andesite of Contractors' Hill, and the sedimentary clays, dips away from the Canal at an angle of 55 degrees. The crumbling of the clays below the contact leaves the andesite mass overhanging, and the overhanging will increase as the canal is carried to its full depth and more clay is exposed. With a rock so fractured as the andesite, this condition is unsafe, and the exposed surface of the underlying clay should, therefore, be protected from further disintegration."

The accompanying views, showing the residence of Mr. Mortimer Fleishhacker, President of the Great Western Power Co., at Woodside (near Redwood City, Cal), after coating with "Gunite," will give but a faint idea of the artistic effects obtained as compared to the flat, worked finish of hand-applied stucco.

The use of "Gunite" affords an entirely new construction for covering frame houses, which gives the appearance and almost all of the advantages of reinforced concrete at no increased cost over old methods. In this construction heavy building paper is nailed over the studding (the latter at the usual 16-inch spacing), over this is stapled a layer of light Triangle Mesh; this being then shot with "Gunite" to a thickness of $\frac{5}{8}$ to $\frac{3}{4}$ inch. The result is a little reinforced concrete wall of flint-like hardness, and with the reinforcing fabric in the center preventing all temperature, shrinkage or settlement cracks. This is a very vivid contrast to "Stucco," which

clings more or less insecurely to one side of a light lath, and has no great denseness or hardness, nor the possibilities of preventing cracks. This new form of "Gunite" construction will undoubtedly be adopted very generally for frame buildings, as a test recently conducted with the co-operation of the engineering staff of the University of California, showed the fire-resisting properties of "Gunite" to be far superior to the best stucco on metal lath.

For covering old buildings, the construction is the same, except the building paper can be omitted. The United States Government has just purchased materials to coat half a million square feet of such work in Honolulu. This is the only way in which temporary buildings can be constructed cheaply, and yet possess the appearance, fire-resisting and weather-

Another View of the Fleishhacker House at Redwood City, California

proof qualities of reinforced concrete, and at a cost approximating frame construction.

Considerable work has been done on the Pacific Coast in the way of demonstration and testing, both at Davenport, Cal., and in San Francisco, including the fire test already alluded to. The commercial contracts already undertaken includes exterior plaster work on the residences of Mr. Mortimer Fleishhacker and Mr. Talbot Walker, gunite lining of the Sloat Boulevard pumping station of the Spring Valley Water Company, and gunite covering of numerous residences and churches in Los Angeles and Pasadena.

While, as in the case of all new inventions, there is much yet to be learned as to the Cement Gun and "Gunite," this does not, as is usually the case, lie in the realm of speculation or theorizing, but chiefly relates to finding out all the possible uses and the best and cheapest mode of operation. It is for these reasons that we feel justified in saying that not since the advent of the concrete mixer, has any appliance appeared which will have such a vital bearing on the further development in the use of concrete and the extension of its field of operation.

The Cement Gun is being handled in various parts of the United States by local Cement Gun companies, so-called, which either operate

themselves, or lease, Cement Guns. The Pacific Coast rights are owned by the Pacific Cement Gun Company, whose headquarters are in the Crocker building, San Francisco, and which has given the Northern California rights to the Lilley & Thurston Company of San Francisco.

* * *

The Tapestry Vogue

Decorators say that a taste for tapestry, like a taste for olives, is oftener than not acquired. For instance, twenty years ago a New York woman about to furnish her new house told the decorator that she "wouldn't have the ugly thing for a gift," the "ugly" thing being a 10 x 12 foot Flemish wall tapestry of somber tone and heraldic design; price $10,000, says the Southern Furniture Journal. The decorator recommended it for the dining-room, but she would not even consider it. So her house was fitted up with modern things very beautiful and costly, to the exclusion of tapestries, ancient or modern.

Today this woman, who meanwhile has rummaged a good deal in the art centers of Europe, would willingly pay twice $10,000 for the rejected tapestry, now the property of a New Yorker who sooner acquired the tapestry taste, and her house contains costly tapestry panels, friezes and screens of which she is very proud, although she still entertains mental reservations as to their beauty.

This, the decorator said, is not an unusual case. The vogue of tapestries developed recently in America, and not confined to the wealthy, is not due to a unanimous opinion as to their beauty. In his opinion average buyers include tapestries in their furnishings as they include olives in their menu, because such things are expected of persons who would keep up with the fashions.

Among persons of average means the vogue of tapestry is shown by the use of costly antiques, but of reproductions made in Europe and in this country, extending even to cotton machine made weaves. In fact, it is to meet the demand for tapestries at moderate prices that cotton French and American tapestries are now included in the stock not only of firms dealing exclusively in upholstery goods, but also of department stores. These tapestries include panels of many sizes and patterns by the yard for friezes and door framing which in design and colors are imitations of Gobelins, Aubussons and other famous makes. As a rule, the French cotton imports cost less than the American cottons.

* * *

Earthquake-proof Concrete

"Le Béton Armé" reproduces a short letter written from a correspondent in Italy who visited Messina, the scene of the earthquake last year, and saw the results of that disaster. He and his party were wandering through the ruins and desolated buildings, when to their surprise they came upon a house which was in good condition and showed no traces of any earthquake. They thought that this building had perhaps been built since the disaster, but found out on inquiry that it was of reinforced concrete and had resisted the earthquake perfectly, not even exhibiting a single crack as a result of that experience.—Le Béton Armé.

Competition for San Francisco's City Hall*

THE Board of Public Works of the City and County of San Francisco makes the following announcement to the architects of San Francisco:

The citizens of San Francisco have authorized the issuance of bonds to the amount of eight million, eight hundred thousand dollars for the purpose of erecting a City Hall and a Civic Center in connection therewith. The first thing that is proposed to be done under the authorization is the erection of a City Hall to be completed not later than the first day of January, 1915.

The Board of Public Works, under the charter of the City and County of San Francisco, has the supervision and construction of public buildings and has power, under the charter, to employ such architects as are necessary.

The Board of Public Works has appointed, as Consulting Architects, John Galen Howard, Frederick H. Meyer and John Reid, Jr., who will advise as to the design and architectural features of the City Hall and the other buildings to be placed in the Civic Center and will determine the conditions which shall govern the design and construction of the City Hall and other buildings.

In order to secure the best design for the City Hall the Board of Public Works intends to employ an architect to be chosen by competition, the general conditions of which are as follows:

First. The competition will be open to all architects who, on January 1, 1912, were legally entitled to practice architecture by reason of being duly certificated in accordance with the laws of California, and who maintained an office for such practice in San Francisco on January 1, 1912, and the competition will be restricted to such architects, and no firm or association of architects formed after January 1, 1912, or for the special purpose of this competition will be allowed to compete, except with the express knowledge and approval of the Consulting Architects.

Second. Architects meeting the conditions of the competition and desiring to compete must file a written application with the Consulting Architects of the Board of Public Works, together with their credentials, not later than April 5, 1912.

Third. The credentials of all applicants will be examined by the Consulting Architects and programs of the competition will be delivered to all applicants entitled to compete on April 6, 1912, and such applicants will thereupon be taken to be employed by the City and County of San Francisco for the purposes of this competition, said employment being subject to the terms of the program.

Fourth. Applications shall be addressed to the Consulting Architects, Board of Public Works, David Hewes building, San Francisco, California.

In accordance with that announcement the following program for governing the competition for the selection of an architect for the City Hall has been adopted:

The winner of this competition will not be permitted to associate himself with any other architect for the conduct of the work of the City Hall without the express approval in writing of the Consulting Architects and no competitor shall submit more than one design.

The author of the design which is judged by the Jury of this competition to be the best, will be awarded the First Prize and will be engaged by the Board of Public Works as architect of the City Hall, under the conditions herein defined.

*At the request of the committee, certain details contained in the program are eliminated. One hundred and ten San Francisco architects have registered for the competition.

No communication shall be held relative to the competition between any competitor and any member of the Consulting Architects or of the Board of Public Works or with any City official, except in writing, addressed to the Consulting Architects of the Board of Public Works.

The designs submitted are to be judged by a jury of seven as follows: the Mayor of San Francisco, one member of the Board of Public Works selected by the Board of Public Works, one member of the Public Buildings Committee of the Board of Supervisors selected by said Committee, the three Consulting Architects and one architect to be chosen by the competitors, as herein provided.

The Consulting Architects of the Board of Public Works will forward each competitor a printed ballot containing three names of architects, also an envelope "A" lettered "Ballot for Architectural Juror, San Francisco City Hall Competition," also a stamped envelope "B" addressed to the Consulting Architects and to be identified as from such competitor. Each competitor will put a cross in ink opposite the name of the architect for whom he desires to vote and seal the ballot with the envelope "A." Envelope "A" thus sealed is then to be sealed within envelope "B," identified as from the competitor whose ballot is within, and sent by registered mail on or before April 15, 1912, to the Consulting Architects. The Consulting Architects will open the unidentified envelopes "A" and announce the result of the voting not later than April 20, 1912.

All drawings are to be made in Indian ink on sheets of cold-pressed Whatman paper 29 inches by 49 inches in size, with a single broad line or band of Indian ink for border.

No color is to be used in line, wash or otherwise.

The plans are to have the cut portions of the walls blocked in. The actual design of floors or ceilings may be indicated, but no unreal "mosaic" is to be shown.

The elevations are to be rendered in Indian ink wash, and to have shadows cast at an angle of 45 degrees from the left.

The sections are to be in Indian ink line only, except that the cut portions are to be filled in with a light wash of Indian ink.

No landscape accessories, such as trees, shrubs, etc., are to be shown, except parking or other treatment between the building and the sidewalk curb.

A single figure of a man six feet high may be shown on each of the elevations and section to indicate the scale.

All plans are to be lettered in plain Roman letters, with names of rooms or spaces; also sizes and, if desired, areas.

Each sheet is to have the following general title in plain Roman capitals:

SAN FRANCISCO CITY HALL COMPETITION

Also the specified title of the drawings as: "GROUND FLOOR PLAN," "EAST ELEVATION," Etc.

One or more drawings may be placed on a sheet.

No description is to be submitted, except the drawings with the inscriptions provided for under paragraph 44 and 45.

Each design is to be accompanied by a sealed opaque envelope unaddressed but lettered "San Francisco City Hall Competition" and containing a card bearing the name and address of the author.

Supplementary information, if necessary, will be issued simultaneously to all competitors, such information becoming a part of the program. All inquiries must be in writing and addressed to the Consulting Architects.

All inquiries for supplementary information must be in the hands of the Consulting Architects not later than May 15, 1912.

No signatures, cipher, nom-de-plume, or other identifying name or mark is to appear on any drawings, wrapper or enclosure except on the card in the sealed envelope provided for in paragraph 48.

Each design is to be delivered flat and unmounted in one sealed package containing all the drawings and the sealed envelope provided for in paragraph 48. All such sealed packages are to be lettered "San Francisco City Hall Competition" and delivered to the Consulting Architects of the Board of Public Works on or before June 15, 1912, at 12 o'clock noon. No design received after that time will be considered or opened till after the award, for the purpose of ascertaining the author and returning the papers to him.

Any competitor who violates any of the above provisions of the program will incur the penalty of exclusion from the competition.

The drawings received in accordance with the conditions of this program will be removed from their sealed packages by the Consulting Architects, who will give to each a number by which it will be known until the awards shall have been made.

Any and all designs which, on examination, do not conform with the provisions of the program will be excluded from the competition and returned, with explanations, to their authors, who shall forfeit any and all claims for payment or consideration.

From the designs which are in accord with this program the jury will select the one which, in its opinion, is the best and designate it as the "First Prize Design." The Consulting Architects will then, in the presence of the jury, open the sealed envelope belonging to this design and disclose the name of the author, whereupon the Board of Public Works will engage the author of the "First Prize Design" for full architectural services in accordance with the minimum schedule of the American Institute of Architects hereto attached, with a first payment of $25,000.00, payable within ninety days of the judgment, such engagement being subject, however, to the contract to be entered into between the Board of Public Works and the Architect and to the following conditions, namely: The Board reserves the right to terminate the employment of the Architect at any time on the payment of the amount due under the aforesaid schedule of the American Institute of Architects, and if the Board terminates the employment of the Architect before the authorization of working drawings by the Consulting Architects, such payment shall be $21,975.00 in addition to the payment of $25,000.00 provided for above.

The employment of a clerk-of-works and his assistants and the employment of specialists in heating, ventilating and acoustics, mechanical, electrical and sanitary engineering will be made by the Board of Public Works on the recommendation of the Architect, subject to the approval of the Consulting Architects. The compensation of such employes will be paid by the City.

All the work of the City Hall Architect, both in design and in superintendence of construction, will be subject to the approval and under the general supervision of the Consulting Architects.

Every competitor submitting a design is understood to agree that in case his design is declared the "First Prize Design" he will accept employment, if so desired by the Board of Public Works, upon the terms and conditions stated in this program.

For the purpose of this competition a firm of architects will be considered as an individual.

All drawings, specifications and their copies, as instruments of service are and shall remain the property of the Architect; during the construction of the building they shall remain in the possession of the Consulting Architects, but one copy of each drawing shall be provided by the Architect for the Board of Public Works, to remain permanently in the files of the Board of Public Works.

The judgment will be rendered by the Jury and communicated to all competitors not later than July 1, 1912.

There will be a public exhibition of all competitive designs after the judgment, but until after the judgment no design will be exhibited to any person other than the members of the Jury. All designs but the "First Prize Design" will be returned to their authors at the end of the exhibition.

If there are twenty competitors other than the City Hall Architect each shall receive the sum of One Thousand Dollars. If there are less than twenty competitors the sum of twenty thousand dollars will be divided equally among them. If there are more than twenty competitors the sum of one thousand dollars will be paid to each of twenty competitors whose designs are judged the best by the Jury after the "First Prize Design" and the balance of the competitors shall receive no compensation. The above shall be compensation in full for all services and payable within ninety days after date of award, provided, however, that if use is desired to be made of anything which is original as to this competition, contained in any other than the "First Prize Design," proper compensation will be made to its author. Should disagreement exist as to the amount of such compensation it shall be determined by a Board of Arbitration to be made up of one person named by the author of the design, one person named by the Consulting Architects and a third person named by the other two. All costs of the arbitration to be borne equally between the City and the Claimant.

* * *

The Plans of the Civic Center Commission

THE San Francisco Civic Center Commission, composed of Messrs. John G. Howard, Frederick H. Meyer and Jno. Reed, has been placed in control of the City Architect's Department, and all future work from the office of the city architect will be directed by this Commission. The latter will have full authority in the selection of any number of local architects to plan municipal buildings, such as school houses, fire houses, etc. This is a splendid idea and will be the means of distributing the city work to the members of the profession instead of confining it to one office run entirely at the city's expense. The change should prove a material saving to the municipality.

Messrs. Howard, Meyer and Reed will, of course, continue to direct the civic center scheme, and the bonds for the improvement having been carried, no time will be lost getting down to work.

The plans submitted by the Commission provide for the laying out of the civic center along the lines tentatively agreed upon nearly three months ago, and includes practically the district then selected.

The scheme goes further, however, than was then suggested, in that it provides for a new approach from Market street into the civic center at a point half way between Jones street and Marshall square, opening a magnificent vista into the civic center plaza from the east.

Marshall square is to be widened by the acquisition of a 50-foot strip on either side, giving a 300-foot opening into Market street opposite Eighth, and every cross street in the section now blocked by the present city hall triangle and the slant of City Hall avenue is to be opened straight through into Market street.

The plans provide for an extension of Fulton street, equal in width to Market street, eastward from the city hall proper to a junction with Market street where Leavenworth street will come in from the north. Hyde street also will be cut from McAllister street south into Market street through what is now Marshall square, while Grove street will be extended straight east to enter Market street at this same place.

Under the plan specified by the architectural commission as "scheme A," which is generally favored by the buildings committee of the board of supervisors, the new city hall will occupy a site two square blocks in extent lying between Hyde street on the east, Larkin street on the west, McAllister street on the north and the Grove street extension on the south, or what is now the old city hall site plus a part of City Hall avenue and a corner of Marshall square.

The old hall of records will be destroyed to make way for the plaza to the east of the city hall, and enough territory will be added to what is now the point of the city hall triangle to form a new block, nearly square, which is the site chosen for the state building.

The two square blocks directly west of the city hall, bounded by Larkin, McAllister, Polk and Grove streets, will form the great open plaza or "people's center."

Fronting this from the south will be the auditorium in the block bounded by Hayes, Polk, Grove and Larkin streets, while at the north, in the block bounded by McAllister, Polk, Golden Gate avenue and Larkin street, will be the art gallery.

The plaza will extend, a full block in width, westward on the line of Fulton street from Polk to Van Ness avenue, flanked on the north by the municipal opera house and on the south by the city library, giving a Van Ness avenue frontage of two blocks from McAllister street to Grove.

Narrow strips fronting the entire civic center territory are to be acquired along all blocks and at all corners of blocks which are privately owned, so that a complete scheme of arcades and peristyles may be worked out around the entire civic center, in conformity with the general architectural scheme.

Although abutting property will, in some places, be under private ownership, the city will control the entire frontage so far as architectural embellishment is concerned, and will have the power to sell or lease openings into these arcades to owners of adjoining property.

There will be two short blocks of business houses between the entrances to the civic center at Leavenworth street, Marshall square and Larkin street.

* * *

More Light for Abe Potash

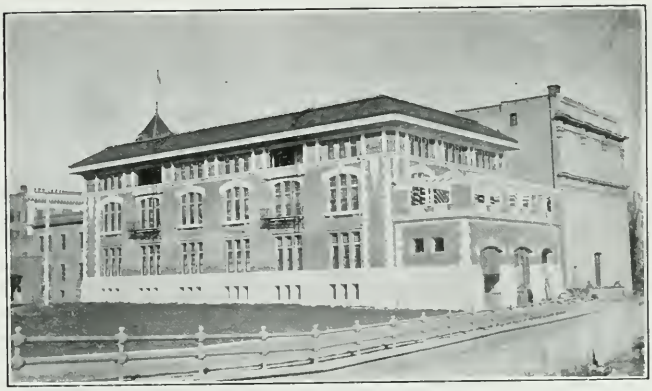
"What is that 'R. S. V. P. to residence of bride'?" Abe Potash asked.

Morris reflected for a moment.

"That means," he said at length, "that we should know where to send the present to."

"How do you make that out?" said Abe.

"R. S. V. P.," Morris replied, emphasizing each letter with a motion of his hand, "means: Remember to send vedding present."



Y. M. C. A. Building, Reno, Nevada
F. J. De Longchamps, Architect

A Few Notes on Hardwood Flooring*

HARDWOOD floors, nowadays, are being recognized by the architect, the builder and owner as a necessity in all classes of buildings. They have ceased to be a luxury and are as extensively used in the bungalow of the laborer as in the pretentious mansion or our twentieth century sky scraper.

In specifying hardwood flooring for the modern residence or other building, the architect has to consider both beauty and harmony in the selection, that the flooring may harmonize with the interior finish.

Oak, maple, beech and birch are the principal hardwoods used for flooring.

The practical hardwood flooring is the eastern oak as it can be used with any interior finish.

Oak flooring has three prime factors—quality, distinctiveness and durability. It is, in fact, the superior flooring and comes rightly by its name, King of Flooring.

It may be interesting to the reader to know that authorities name seventy-three varieties of oak as growing in the United States; doubless, even this estimate is considerably below the actual number.

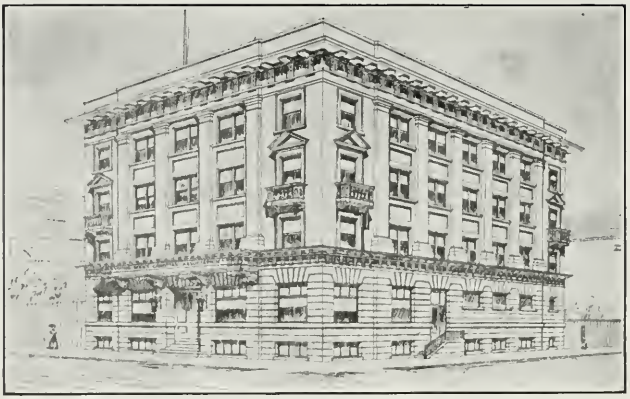
For classification the oaks are divided into the white oak and the red oak.

Both white and red oak are of the beech family and range from sixty to one hundred feet in height and from one to six feet in diameter.

The variety of white oak which is superior to all others, is Quercus Alba, and of the red oak, Quercus Rubra. These are the two species almost exclusively used by the oak flooring manufacturer in the production of flooring.

The favored oak flooring is the quarter-sawed. This is because of its durability, non-shrinking qualities and artistic appearance.

*All the buildings illustrated in this article have hardwood floors supplied by the Strable Manufacturing Company of Oakland.



Y. M. C. A. Building, Stockton, California
Walter King, Architect

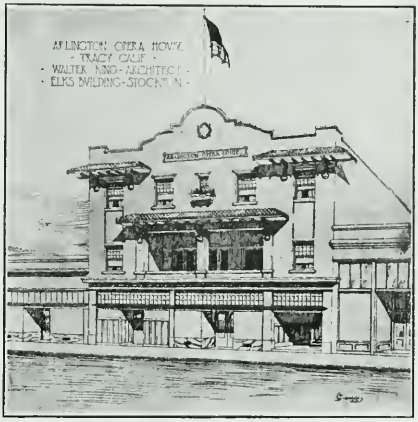
Y. M. C. A. Building, Honolulu, Hawaiian Islands
Ripley & Reynolds, Architects

Y. M. C. A. Building, Oakland, California
William C. Hayes, Architect

Y. M. C. A. Building, San Francisco
McDougall Bros., Architects

Elks Building, San Francisco
A. A. Cantin, Architect

Elks Building, Alameda, California
J. Eugene Freeman, Architect



Arlington Opera House, Tracy, California
Walter King, Architect

Hotel Stockton, Stockton, California
Frederick Brown, Architect

Commercial Hotel, Fresno, California
Edward T. Foulkes, Architect

Hotel Sacramento, Sacramento, California
Sellon & Hemming, Architects

Shattuck Hotel, Berkeley, California
Ben G. McDougall, Architect

Hotel Montgomery, San Jose, California
William Binder, Architect

Building for Drexler and Preston Estates, San Francisco
Reid Bros., Architects

Cliff House, San Francisco
Reid Bros., Architects

Because of its beauty and durability, it is used in covering large floor spaces where the qualities are requisite, as in ball rooms, club rooms, drawing rooms, dining rooms, etc.

In quarter-sawing either the white oak or the red oak, their peculiar characteristics are brought out and in choosing either kind for flooring, it is simply a matter of taste as both varieties are equally durable and beautiful.

In no other way can the beauty of oak flooring be brought out as it is by quarter-sawing it.

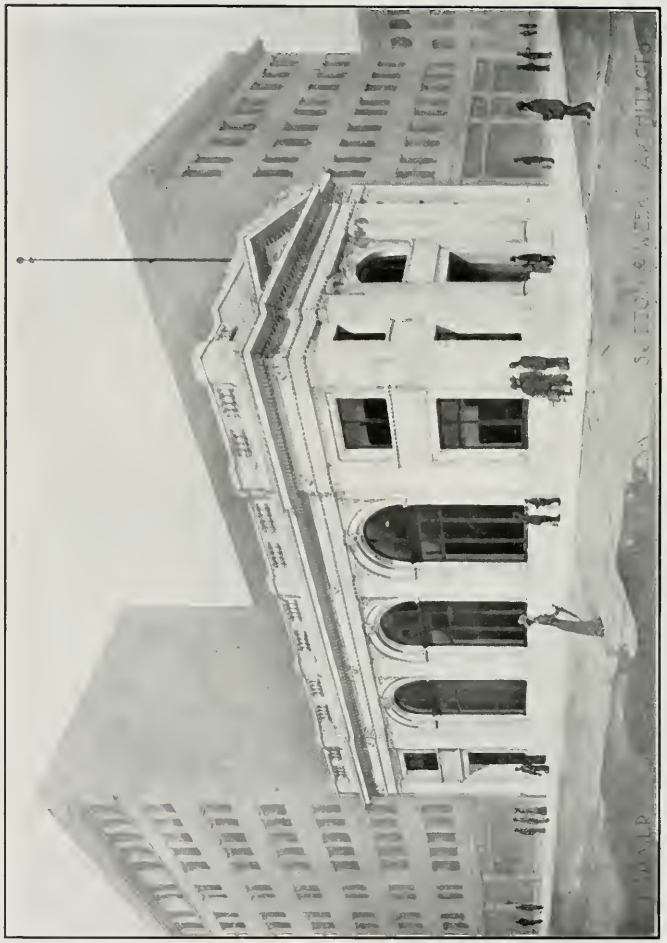
When it is quarter-sawed, it is cut at right angles to the rings of growth, which method of sawing reveals the handsome figure.

In producing quarter-sawed stock, the expense is much greater than in the plain stock, as greater waste of wood is involved. Only large and high class logs can be used when quarter-sawing and the labor is much heavier, which also adds greatly to the expense.

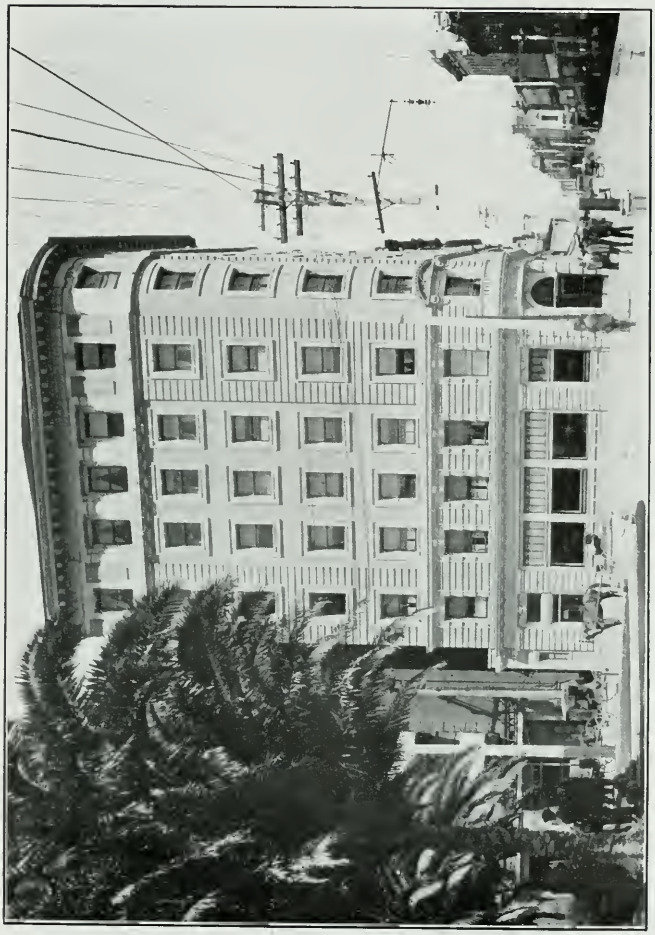
Maple, beech and birch flooring are very similar in many of their characteristics and cannot be excelled for floors subject to hard and constant use; therefore, from an economical standpoint, there is none better. The finest hard maple is that of the region of the Great Lakes. Here it often grows to be three feet in diameter with a height of sixty feet to the first limb. They sometimes grow to be one hundred and twenty feet in height. In the past twenty years, hard maple, as lumber, has become second in importance in the lumber industry.

Hard maple is tough and hard and strong—being almost equal to hickory in its strength. Because of its characteristics, some consider it unexcelled for flooring.

The beech is a beautiful tree, having smooth, light grained bark. It often grows to a height of from one hundred and twenty to one hundred and forty feet, with a diameter of from two to four feet. Like the wood of the maple, the beech wood is hard, strong and tough. In grain, it somewhat resembles the oak. This wood takes a beautiful color and, of late years, has become to be greatly appreciated. Beech and maple are so similar in appearance that beech can be used in place of the maple. Beech is often preferable because of its artistic effects, as it has a warmer hue.

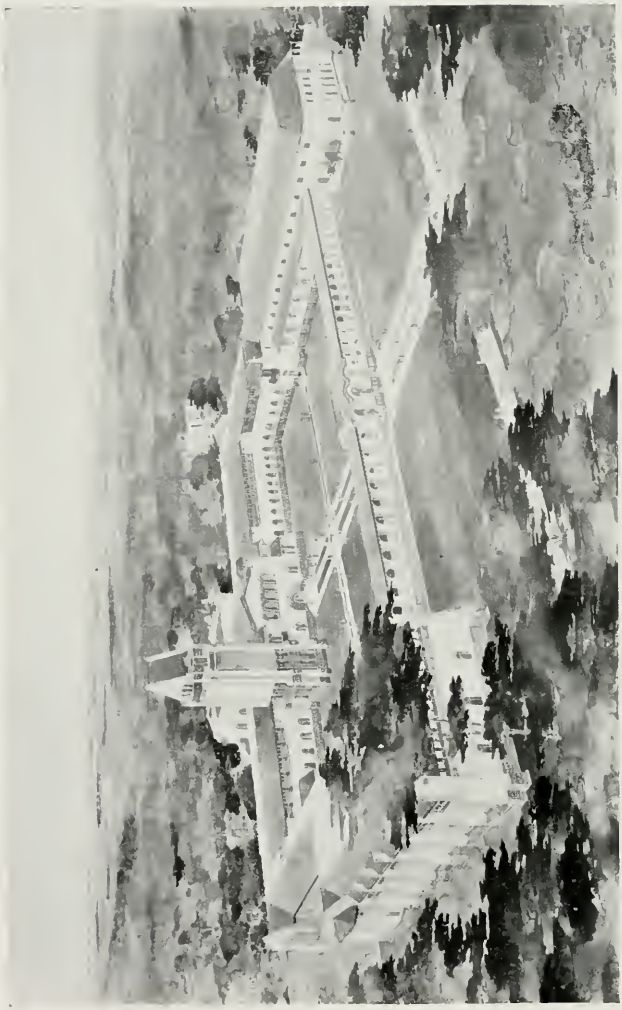


Farmers and Merchants Bank Building, Oakland, California — *Sutton & Weeks, Architects*



Savings and Loan Society Building, Stockton, California

Meyers & Ward, Architects



State Normal School, San Jose, California
State Engineering Department, Architects

Masonic Temple, San Mateo, California
Designed by J. B. Ogborn

Birch flooring, to a certain extent, is very similar to maple. Its texture is much the same and is practically of the same value for flooring. It takes color stain readily and is susceptible to a beautiful finish. Birch is a native of the northern forest. It ranges in height from thirty to ninety feet with a diameter of from two to four feet. The bark is dark brown. It is a close grained, strong, heavy wood.

Birch possesses a certain sheen that is rare with most woods. It makes a beautiful and durable floor.

County Hospital, Martinez, California
William H. Weeks, Architect

Suggestions for Creating a City Beautiful

By CLARENCE R. WARD, Architect.*

"TO him who in the love of nature holds communion with her visible forms she speaks a various language," so spoke the great poet Longfellow, but his voice evidently did not reach the ears of the engineers or surveyors or whatever they were who literally "laid out" our city. They obviously did not "hold communion with her visible forms," for they took no advantage of the opportunity offered by our San Francisco hills to create beautiful vistas and easy gradients to the top of our splendid hills by means of a serpentine driveways or streets leading to them. Nature evidently did not speak to them a various language for our town is laid out like a checker-board and our hills and vales are desecrated by the straight streets and lanes which scar them. Throughout practically the whole of the city these physical conditions are now accomplished and it is now up to the present and future citizens of San Francisco to make the best of conditions and to remedy her defects as far as possible.

Our municipality is proceeding in the right direction by the proposed creation of a splendid people's center surrounded by all the great governmental and other public buildings. Our park system is constantly improving and upon the fact that we have so many small parks in addition to our great Golden Gate Park we are to be congratulated. These efforts are splendid ones, but are naturally limited by the amount of work it is possible for the Government of our City to accomplish. To attain a real City Beautiful it now rests with the citizen or house-holder to make his own abode, whether devoted to business or residence purposes, as attractive as possible, and to this end the city can be greatly improved in appearance by the installation of plants, flowers and gardens. In the accomplishment of this they will be assisted by the most generous climate in the world and anyone who has ever tried to beautify his home by the mere application of a few simple window boxes knows how very easy it is to maintain these and what a delight they are to the eye. I want to make a special appeal for the window boxes, potted plants and vines owing to the low cost and the ease with which they may be maintained. These may range from the modest grocery box, which may be painted and set with plants, the wooden keg or pot, on up through the more ornamental wooden boxes which are lined with metal and the ornamental terra cotta or cut stone flower boxes of the mansion. Wooden boxes, to be permanent, should be lined with zinc, galvanized iron or tin, and should be sufficiently deep to carry enough rich soil to prevent the roots of the plant from crowding.

As far as plants are concerned, they are of many kinds, the easiest to raise being possibly the geranium or nasturtium. Efforts have been made in a number of cases to beautify the buildings by either planting of trees in sidewalks, vines in small grass plots along the walls and in window boxes. Notable amongst these are the Family Club, Bohemian Club, University Club, Girls' Club in the Mission, and the Lurline Baths, as well as two or three commercial buildings in the city. A sight of these should convince one that flower boxes, trees and other planting are applicable to any type of building, even to the factories. Owing to the low cost of wood, plaster and imitation tiles, coupled with the poor taste of some of our designers, a large section of our city is smeared with a charming collection of execrable flats and apartments. These might be partially redeemed by flower boxes alone.

* Member of World's Fair Architectural Commission.

The next time the reader drives or strolls out along the Ocean Boulevard he will notice a roadside resort which has window boxes and ledges completely filled with a sort of drooping moss vine. This converts an otherwise hideous piece of architecture into a charming example of the success of the window box.

Those who have garden plots, however small, are indeed fortunate, so much can be done by a little study and care. The plants which will grow the year around are myriad; the experts will tell you which ones are best and how to plant. An appeal should be made for a pool in your garden. This may be covered with lillies or water plants or may be kept clear for reflective effects. Look at the reflection of the marble portico near the Lake in Golden Gate Park. At any rate the pool attracts the birds and forms a cool and charming spot in your garden.

A touch of green, whether it be created only by wild grasses or weeds, tends to relieve many a dreary spot. Every one will remember how the wild grasses covered the terrible scars left on the landscape the winter and spring after the great fire. It is greatly to be regretted that that fire destroyed so many of the trees which were planted in the sidewalks of the old city, as there does not seem to have been any concerted effort over the replanting of them. Portland and Santa Rosa are noted for their rose gardens; Los Angeles and Pasadena for orange groves and gardens, and there is no reason why San Francisco should not be equally famed for her gardens, large and small, as well as her window boxes. If all will take a personal pride in their domicile this much desired result will be accomplished

* * *

The Panama-Pacific Exposition Architects

[From the Western Architect.]

THAT the architectural glories of the Columbia Exposition will be rivaled by the development of the design of the Panama-Pacific International Exposition of 1915, at San Francisco, may be anticipated and made probable by the selection of the architects who will design the buildings. As with the Columbian Exposition, a commission of architects was appointed. This is composed of Willis Polk, William B. Faville and Clarence R. Ward, of San Francisco. This commission will be assisted by McKim, Mead and White, Thomas Hastings and Henry Bacon of New York, and Louis C. Mullgardt and George W. Kelham, of San Francisco. How the selection of these architects was made we do not know, but it may be interesting as a piece of unwritten history to narrate that before Chicago was designated as the place where the Columbian Exposition would be held, and while the matter was being threshed out in Congress, John W. Root was asked, "Who will design the buildings?" Root answered, that "No one architect would." They should be designed by a number of the best architects in the United States. This was interesting, except for the resultant query, "Who are the best architects?" Then came a careful weighing of the merits of each well known architect, and resulted in the names of fifteen being written on a card. The card was stored into a pigeon hole in his desk. When the commission of architects was appointed twelve in number (or was it ten and two added afterwards?), they were all architects whose names were written on that card, and it might be added that the firm name of Burnham and Root was not on it. Of course, the San Francisco Exposition will not be as strong in veteran architects as the one at Chicago. Mr. Mead, the sole remaining member of his firm, is a man of great ability,

as is Mr. Hastings. Mr. Bacon is not so well known but his work displays a strength of character that gives him a good reputation in New York. Mr. Faville, of the firm of Bliss & Faville, has long held a premier positon in San Francisco. A younger element comes in through Louis Mullgardt and Willis Polk. Each have been practicing in San Francisco about ten years and each went there with the reputation of being among the best draftsmen the middle West has produced. Mullgardt worked for Henry Ives Cobb, and we believe designed the Newbury Library. He may have designed the Fisheries Building at the Columbian Exposition. All these gentlemen are artists enough and enthusiastic enough to enter into the work with an intention to present a picture of architectural advancement and that is what architects will look for in the Panama-Pacific Exposition of 1915 at San Francisco.

* * *

Says Country is Awakening to Advantages of Brick Construction

ENTHUSED over the rapid growth of fireproof building materials in public favor, particularly for residences and fine mercantile buildings, Howard Frost, vice president of the Los Angeles Pressed Brick Company, and an associate editor of the Architect and Engineer, recently returned from the Chicago Clay Products Convention, enthused with the outlook for the increased use of brick and other clay products.

"I was astonished," declared Mr. Frost, "to note the rapid growth of sentiment in favor of brick for building purposes. Delegates from every part of the country reported that the people were taking an unusually active interest in building homes which are artistic as well as fireproof.

"One thing which vividly impressed me at the Chicago meeting was that the fact was demonstrated beyond a doubt that brick houses can be built for an advance of not more than 10 per cent over wooden dwellings. When the cost of insurance, painting and general maintenance is considered it can easily be seen that this additional cost at the outset is soon overcome, leaving a better investment in the long run.

"One of the most remarkable brick shows ever held in the world, the International Clay Products' Exposition, took place at the Coliseum, which was filled to overflowing with artistic creations in brick and tile of every variety. Exhibits of vitrified paving so generally used in all the large Eastern cities, were displayed by the National Paving Brick Manufacturers' Association. There was a complete brick house built in the big auditorium and finished throughout ready for occupancy.

"America leads the world in many things and it is to be regretted that one of these is her fire losses, which exceeds $200,000,000 annually, besides entailing untold suffering and loss of life. At the Chicago meeting it was clearly demonstrated that the public is awakening to the necessity of fireproof dwellings and mercantile buildings, especially in the larger towns and cities. This feeling was perhaps nowhere better exemplified than in Chicago itself where, during the convention, the daily papers urged as of vital importance the expansion of Chicago's fire limits, preventing an ever possible repetition of the terrible fire of 1871."

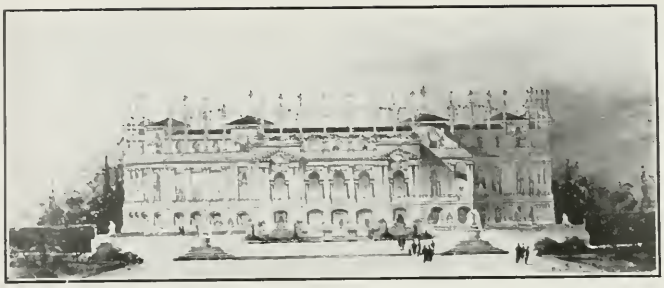
* * *

Fixing Him

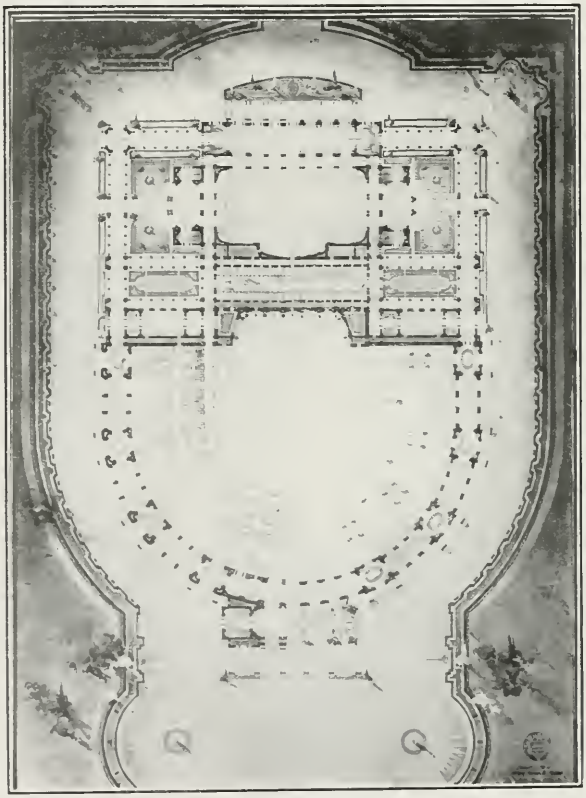
Applicant—Could you spare me a dime to get a bite to eat?
The Citizen—Sure! And here's a quarter for the waiter!

Sketch for a Country House, Los Angeles, California

Apartment House for Marion Leventritt, San Francisco
G. A. Lansburgh, Architect



Front Elevation of a Festival Hall and Open-Air Theater



Design for Exposition Building and Open-Air Theater

Edward Frick Del.

Sectional View, a Festival Hall and Open-Air Theater
Edward L. Frick, Architect

The Recent Competition of the Pacific Coast League

By JOHN BAKEWELL, Jr.*

THE first of the annual competitions of the Architectural League of the Pacific Coast has recently been held, and a few words of praise for the students who took part in the competition will not be misplaced.

The subject was a very difficult one, a subject for which no precedents could be found, and yet of the sixteen men who finished and handed in projects there was hardly one who had not arrived at a real solution of the problem. Some of them were better than others, naturally, as some of the men competing were more experienced draughtsmen, but considering the length of time allowed and the fact that nearly all of the men competing were obliged to do their work outside of office hours, the results were remarkable.

There has been a steady improvement in all of the men who have been doing the League work and this was shown in this competition. We do not think there would have been nearly as good a showing a year ago and our hope is that next year the work will far surpass that of this year.

While the work done deserves this praise, we do not consider that the final standard of excellence for scholarship work has been reached by any means. We expect this year's winner to begin a more serious study of architecture and expect that when he returns from his studies he will then have attained a standard that we can point to with real pride.

The other men who were placed each represented certain unique qualities of excellence.

The project of Mr. Edward Frick, the winner, seemed to be a very good solution of the problem. His plan was very well proportioned, well studied and very cleverly presented. While his work lacked certain qualities of simplicity and directness that distinguished some of the other projects, it was felt that the qualities of excellence were all positive ones and so merited the prize. The only criticism made of Mr. Frick's project was that there was an over-elaboration; a certain lack of restraint. However, this was over-balanced by the brilliant qualities that accompanied this defect.

The man who was placed second, Mr. Stafford Jory, frankly recognized the Open Air Theater in his facade, and accentuated its coliseum-like character. Unfortunately the proportions of his plan left much to be desired, the relative proportions of the different parts not being well expressed. His

*This criticism and account of the work of the jury is simply a personal impression of the reasons that actuated the jury in placing the drawings as they were placed, and is not supposed to be a criticism given out by the jury as a whole.

Placed Second. S. L. Jory, University of California

scheme was not so well handled as several of the others, but this simple and frank treatment of the problem won him the second place.

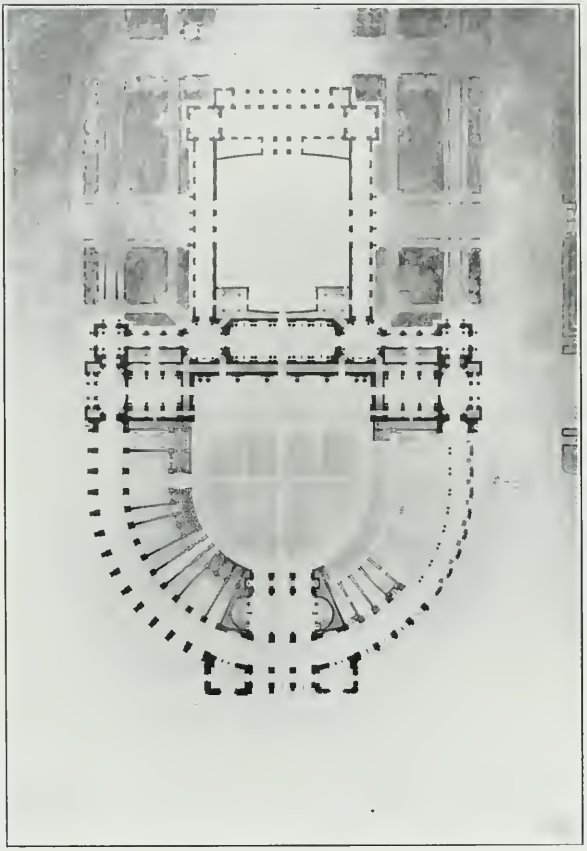
The man who was placed third, Mr. Chandler Harrison, had a carefully studied plan, and a simple and pleasing scheme. The relative proportions of the component parts of the problem were well expressed. His problem was not so well presented as some of the others, and his scheme of enclosing the whole building in a vast and imposing collonade, while it added to the simplicity of the structure, in a certain measure concealed its functions. The author of this project expressed a very clear-cut idea. Whether a columnar treatment of the facade was the best or whether a treatment that expressed more clearly and frankly the functional and structural character of the building was a question that caused considerable discussion and was finally decided in favor of the latter treatment.

The design that was placed fourth—that of Mr. Francis Pierpont Davis, like that of Mr. Jory, well expressed the Amphitheater idea, in fact, expressed it even better than did Mr. Jory. By placing his amphitheater in the rear he was able to bring out this character very well. However, his entrance was not well handled, and in general the "salle des fetes" and other dependencies were badly confused.

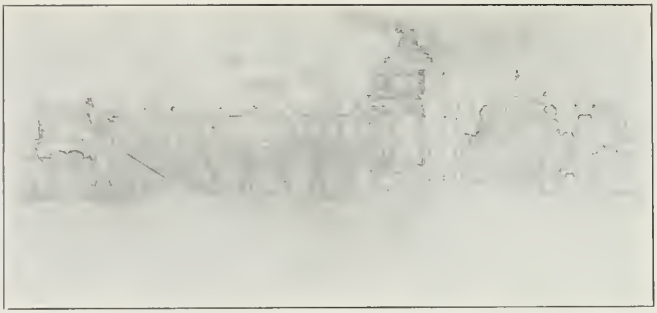
The design that was placed fifth—that of Mr. Harry Michelsen—was well proportioned, well studied and beautifully presented.

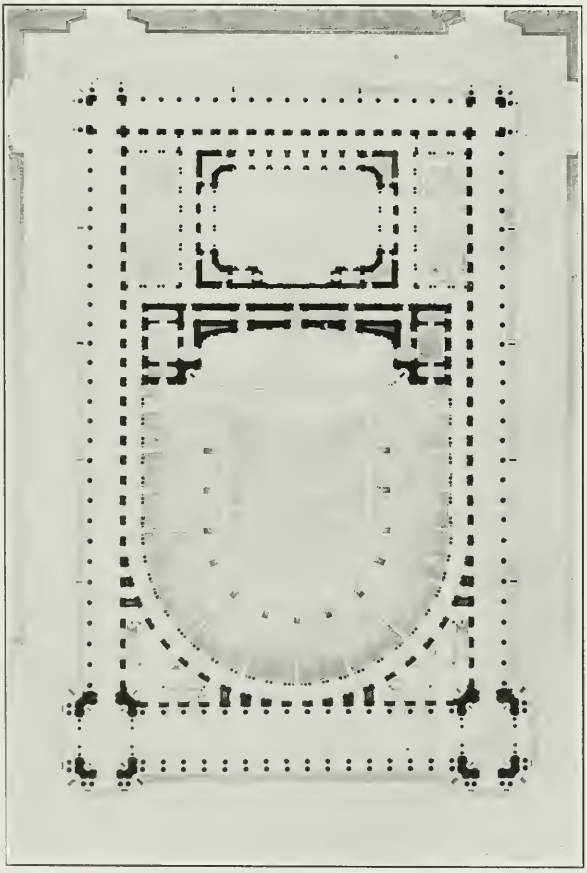
The other designs published, those of Mr. Rosenberg and Mr. Sneeringer, both had very good qualities.

Mr. Louis Rosenberg presented the best project in the way of real draughtsmanship and good presentation. Then too, his project was in some ways very well designed, but it had certain very serious defects. His open air theater was too small and his "salle des fetes" was comparatively too large. Then, too, the design of the plan was not so pleasing as that of many of the other men. Mr. Rosenberg increased his seating capacity by using the roof over his surrounding circulation.

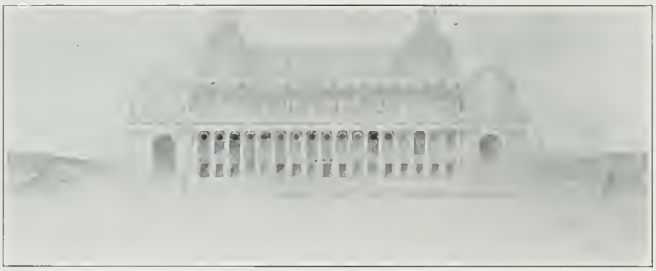


A Festival Hall and Open-Air Theater
Placed Second. S. L. Jory, University of California





Placed Third. Chandler I. Harrison, San Francisco Architectural Club



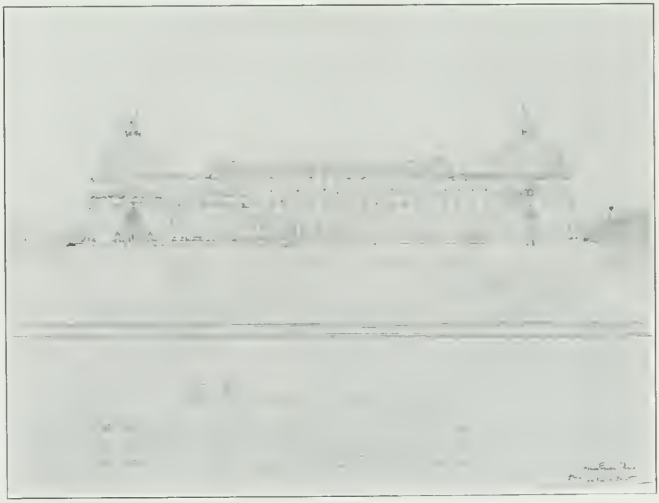
Placed Third. Chancier L. Harrison, San Francisco Architectural Club

However, this device was not necessary to get the required number of seats and had the result of making his main auditorium lose its importance, and made the apparent proportioning of his plan weak.

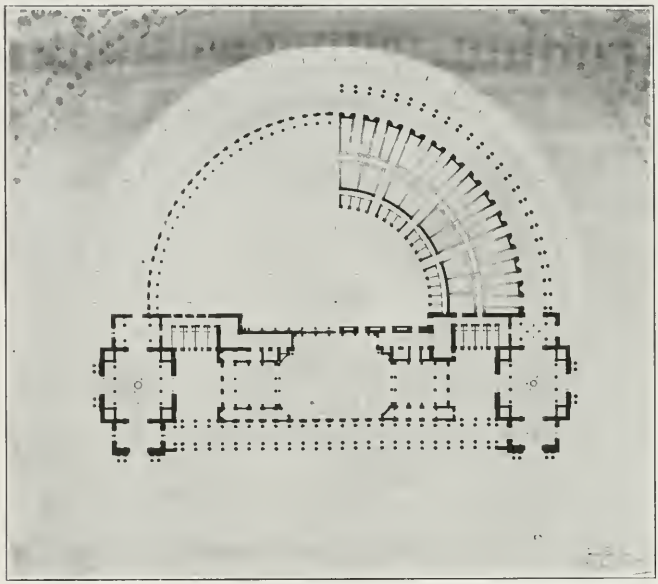
The seating capacity even with this device was not adequate. This criticism of Mr. Rosenberg's project is given at such length because his project was in many ways so very good that we felt it should be reproduced with those of the prize winners.

The project of Mr. Sneeringer was not so well presented as many of the others but notwithstanding this fact merited publication.

We have only touched upon matters of a general nature in this criticism. Other questions that were considered in the judgment were those of free circulation in plan composition in the design, etc., but space prevents a



Placed Fourth. Francis Pierpont Davis, Los Angeles Architectural Club



Placed Fourth. Francis Pierpont Davis, Los Angeles Architectural Club

more lengthy discussion. Some one defect was counterbalanced by some other point of excellence. None of the projects were without serious defects but at the same time all of those which were placed had certain very good qualities. The jury had to weigh these questions for and against each project before arriving at their final decision.

Those present acting upon the regular jury were Messrs. Robert Farquhar, Jno. Galen Howard, Geo. W. Kelham, Louis C. Mullgardt, Loring P. Rixford, Wm. C. Hays, G. Albert Lansburgh, Arthur Brown, Jr., and Jno. Bakewell, Jr., Chairman.

Mr. A. F. Rosenheim, President of the A. L. P. C., and Mr. Willis Polk, former president of the A. L. P. C., were also present.

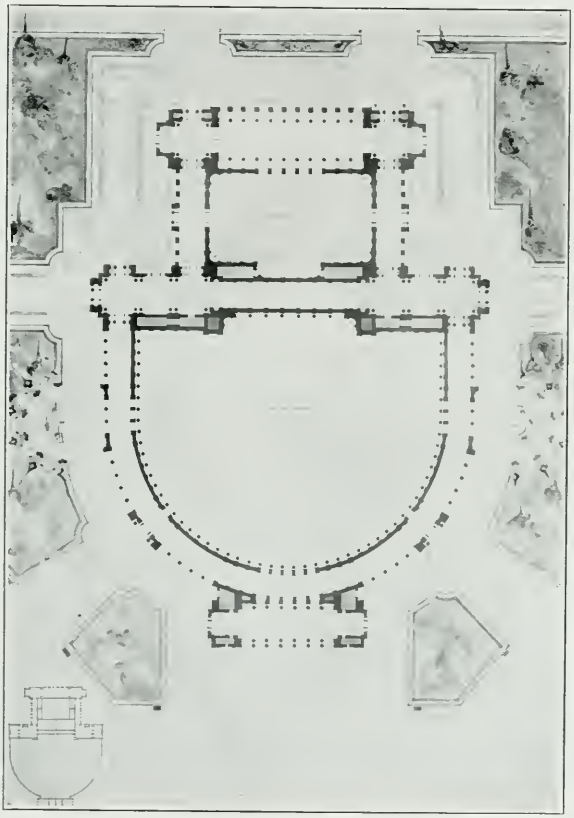
In giving this criticism the writer expresses only his individual impression of the judgment and of the several projects here discussed and does not speak for the jury as a whole.

The jury was made up of the members of the Education Committee and the patrons of the various Ateliers who were present.

First an advisory committee was appointed consisting of Messrs. Thos. Hastings, Henry Bacon, Wm. Richardson of McKin, Mead & White, and Jno. Galen Howard, who made individual recommendations for first five places.

These recommendations were unanimous with the exception of the first and second place, the majority of the advisory committee placing Mr. Jory first.

Placed Fifth. Harry Michelsen, San Francisco Architectural Club



Placed Fifth. Harry Michelsen, San Francisco Architectural Club

Placed Fifth. Harry Michelsen, San Francisco Architectural Club

The regular jury then cast their vote, a majority confirming the majority report of the advisory committee, with the exception of the first and second place in which particular the minority report was confirmed.

Following is a list of those participating in the competition:

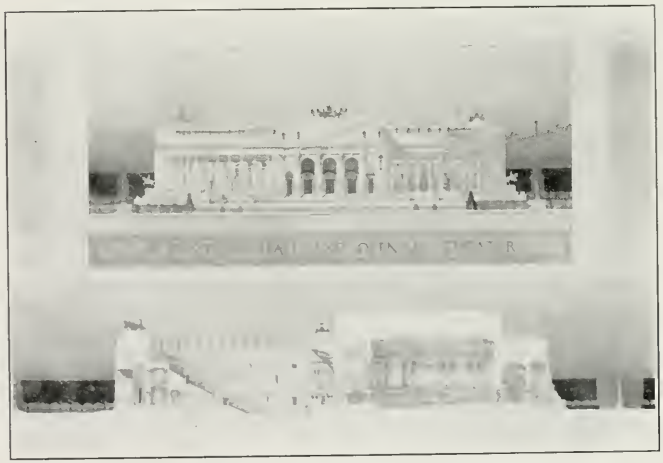
Chandler I. Harrison, Carl J. Warnecke, Harry Michelsen, Stanley C. Flawn, Edward Frick, Fred Kramer, H. C. McAfee, Ernest Weihe, [Arthur Brown, Jr., Patron S. F. A. Club.]

G. E. Comfort, W. J. Graham, Stafford Jory, Eugene Marten, [Wm. Chas. Hayes, Patron U. of California.]

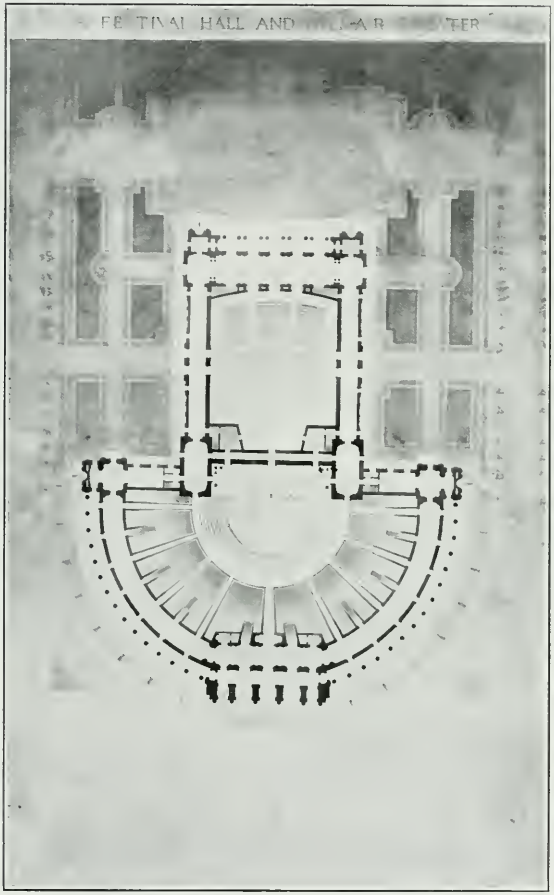
Francis P. Davis and Geo. N. Aleon, [D. Allison, Patron, L. A. A. C.]

Louis Rosenberg, [E. F. Lawrence, Patron, P. A. C.]

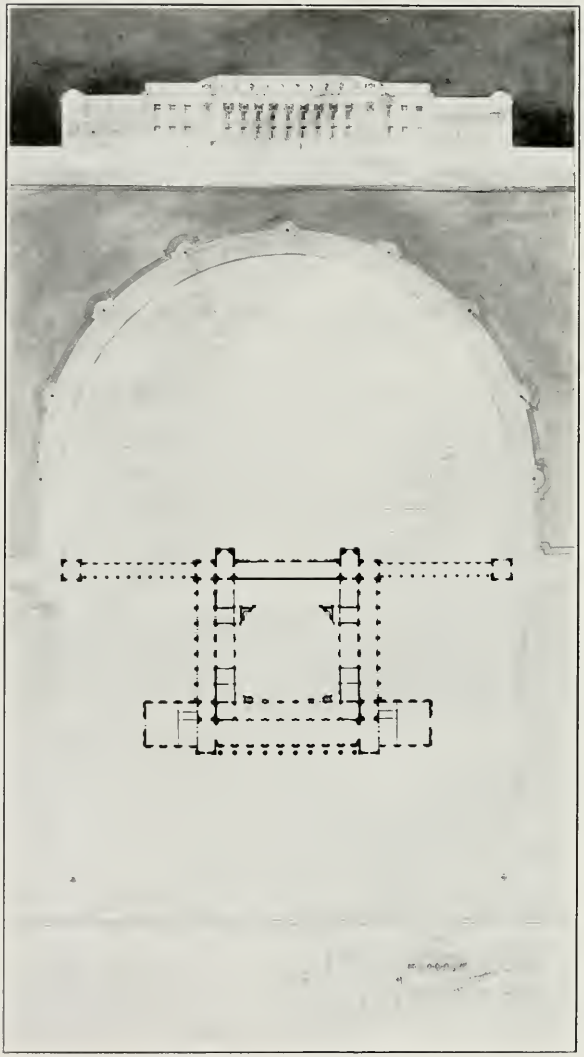
John A. Sneeringer, [Wm. K. Macomber, Patron, S. A. C.]



Louis C. Rosenberg, Portland Architectural Club



Louis C. Rosenberg, Portland Architectural Club



John A. Sneeringer, Seattle Architectural Club

ARCHITECTURAL LEAGUE
OF THE
PACIFIC COAST (Official)

Officers for 1912.

President,
E. F. Lawrence, *Portland, Ore.*
Vice-President,
John Bakewell, Jr., San Francisco.
Jury,
John Galen Howard
Louis C. Mullgardt
Loring P. Rixford
George W. Kelham John Bakewell, Jr.

Secretary,
J. C. Whitehouse, Portland, Ore.
Treasurer,
Myron Hunt, Los Angeles, Cal.
Education Committee,
E. F. Lawrence, Portland, Ore.
David J. Myers, Seattle, Wash.
Myron Hunt, Los Angeles, Cal.
Robert Farquhar, Los Angeles, Cal.

NOTE—The members of the Jury are also members of the Education Committee.

RESULTS OF COMPETITION WORK FOR MARCH-APRIL

Student Work.—All mentions are credited by the Society of Beaux Arts Architects, New York. First mentions and medals must be confirmed by the New York Society before being credited by them.

San Francisco Architectural Club.

Plan Problem.	A Loggia.	Rendered.
H. C. White	Atelier, Brown	Mention.
Angelo Hewetson	Atelier, Brown	H. C.
William Garren	Atelier, Brown	H. C.
Guy Brown	Atelier, Brown	
W. W. Morrison	Atelier, Brown	Mention.
Leo. F. Starks	Atelier, Brown	H. C.
William Spivook	Atelier, Kelham	
H. A. Thomson	Atelier, Kelham	Mention.

Los Angeles Architectural Club.

Plan Problem.	A Loggia.	Rendered.
C. Tracy Hoag	Atelier, Allison	
Frank Rasche	Atelier, Allison	Mention.

San Francisco Architectural Club.

Order Problem.	A Gateway.	Rendered.
Chas. W. Norgrove	Atelier, Rixford	
J. H. Vollmer	Atelier, Brown	Mention.
L. A. Bryant	Atelier, Brown	Mention.
J. P. Maloney	Atelier, Brown	Mention.
George O'Brien	Atelier, Brown	Mention.
S. D. Willard	Atelier, Brown	Mention.
J. A. Davis	Atelier, Brown	
Ray Locke	Atelier, Brown	Mention.
A. Ronda	Atelier, Brown	Mention.
Virgil Jorgensen	Atelier, Brown	Mention.
Ralph Wyckoff	Atelier, Kelham	Mention.
Fred Chapman	Atelier, Kelham	Mention.
W. W. Eckeley	Atelier, Kelham	
Raymond Shaw	Atelier, Kelham	Mention.
W. W. Hubbard	Atelier, Kelham	
G. R. Schmidts	Atelier, Kelham	Mention.
Chas. F. Strothoff	Atelier, Kelham	Mention.

Portland Architectural Club.

Order Problem.	A Gateway.	Rendered.
John Bauman		
Fred Fritsch	Very good	Mention.
L. H. Dittrich		
Roy Wright		Mention.
Geo. G. Luben		

Seattle Architectural Club.

Order Problem.	A Gateway.	Rendered.
Sneeringer	Atelier, Macomber	Mention.

Los Angeles Architectural Club.

Order Problem.	A Gateway.	Rendered.
John W. Brooks		Mention.

University of California.

Order Problem.	A Gateway.	Rendered.
G. B. Fletcher		
W. W. Beatty		
Willis Huson		
M. B. Morbray		
F. B. Mayo		
W. P. Stephensen		
R. Sisson		Mention.
Margaret Locan		Mention.
Y. Ogawa		
R. I. Stringham		
Peter L. Sala		Mention.
Roy B. Crites		Mention.
Thos. E. Pring		
Edwin E. Merrill		Mention.
Ralph D. Taylor		
A. W. Heen		

* * *

Sees No Objection to the Prepared Specification

Editor The Architect and Engineer, San Francisco, Calif.

Have read the article entitled "The Nigger in the Wood Pile" in your very valuable magazine for March, in which you have exploited the prepared specification which no doubt is, in many instances, the bias and carefully concealed instrument that is most arbitrary in character.

However, the time of many architects is so taken up with greater problems of their profession that very little moment is given to the writing of specifications that are intelligent to the bidding contractor. In fact, many of these are abstruse to the extreme and convey the widest latitude of ambiguity. Some, in fact, that have come to the attention of the writer, who is particularly interested in the plumbing specifications, have been misleading. They call for a type and describe it in two distinct patterns. This, no doubt, has occurred by allowing the specifications to be written by some one in the office, generally the stenographer, who has no idea whatever of the uses and functions of the article specified, therefore, the description is merely a jumble of words.

The best specifications are those that are written specifying a type, and the words "or equal" in prominence with the modifying clause "subject to the approval of the architect." This will preclude any specified privilege and will insure the contractor from substituting an inferior article and will give the architect an opportunity of judging for himself.

When an "or equal" fixture has been bid upon it necessitates a sample and here is where the clause "subject to the approval of the architect" bears the greatest weight.

The writer can see no objection to a prepared specification of this kind when it is based on a broad line and coming from a legitimate source.

Yours very truly, GEORGE H. TAY COMPANY,
H. H. Hoeber, Sales Dept.

The Importance and Cost of Cement Testing

By W. PURVES TAYLOR.

ALTHOUGH the importance of testing is generally recognized by the large consumers of cement, especially those engaged in constructing public works, its value, even to the present time, is not always apparent to the consumer of small quantities. It must be remembered that cement is an artificial product made by mixing certain ingredients and then treating the mixture in a complex mechanical process, so that, even if the greatest care is exercised, as it is in the best plants, certain variations in quality must necessarily exist. The ingredients are not by any means constant in composition, and hence both the proportions of the mixture and the treatment of manufacture must be continually changing. It is accordingly unreasonable to expect that any cement should invariably be uniform in its qualities and properties. The older plants have a certain advantage of experience over the newer ones, but, even in these, occasional batches of inferior cement are produced and allowed to get on the market. In the writer's laboratory all the well-known eastern brands of cement are constantly being tested, and no one of them has escaped occasional rejections.

Reliable manufacturers generally take every precaution to prevent defective cement from leaving the mill, and make most careful tests to that end, but these tests are subject first to possible laboratory errors of sampling and manipulation and secondly do not and can not take into account the alteration in its properties that the cement undergoes under certain conditions after leaving the mill. These variations and irregularities in the cement unavoidable in manufacture and not always discovered by mill tests, and which may be vital to the integrity of the finished structure, show the importance and the necessity for cement testing.

It is often argued that while testing is necessary for larger engineering works it is not as necessary for the smaller consumers—those erecting small buildings, making concrete blocks, or laying sidewalks—while, as a matter of fact, it is especially important in these cases, for if there is any particular difference in the quality of the material at the mill, it may be taken for granted that the poorer cement will be sold where it will not be tested. Even the cement rejected on the large works is generally sold to a dealer or small consumer. The trouble and cost of testing may at first make it seem almost prohibitive, but after a user of cement has begun testing and has found the freedom it gives from trouble on the work, and has felt the assurance that all his structures are safe and permanent, he realizes its value and invariably continues it.

The fact that poor concrete may be made from the best cement by reason of the use of an indifferent quality of aggregate or by careless mixing and placing, is no argument against testing cement, but rather one for it, because careful inspection during construction will readily detect and correct these conditions but no field inspection can prevent the use of inferior cement. A user of cement who desires the best quality of materials must therefore depend upon laboratory tests.

At the present time, however, it is almost unnecessary to advocate cement testing, for its importance has become so generally recognized that all important works regard it as an essential accompaniment to concrete work. The vast amount of cement now used requiring tests and the ensuing competition for decreased cost in testing has led, however, to an unfortunate condition in the testing itself.

Cement testing is a difficult process requiring experience, care, precision and knowledge, and hence should only be entrusted to well qualified

men, but only too often this important work is relegated to utterly untrained and careless operators and the results obtained by such methods are really worse than nothing, as they often are positively misleading.

It should be recognized at once that if cement tests are made it is worth while to make them well, even at possibly a somewhat increased expense. A properly made cement test complete is worth to any commercial laboratory from eight to ten dollars a sample, with chemical testing at from a dollar and a half to two dollars per ingredient extra. Accurate appliances, experienced trained operators, and intelligent oversight cannot be used if the cost is materially less, unless under exceptional conditions, and, without this accuracy in the work, tests have but little value. When a large laboratory is installed directly on the site of construction, testing many samples a day, with no charge for collecting the samples, and running at no profit it may be possible to test cement for as low as from 1 to 2 cents a barrel, but for the ordinary concrete jobs it cannot be expected to cost much less than 4 or 5 cents a barrel.

In conclusion: Well-made tests of cement are of the greatest importance and value to every consumer of cement, but they must be made with the greatest care, and only by responsible and trained men. If so made, the tests are well worth the time and trouble they cost. A cheaply made test, however, is liable to prove an expensive investment.

* * *

Efflorescence

EFFLORESCENCE is the term applied to the appearance of a white incrustation on the walls of buildings, or where a salt looses its water of crystalization and presents a white powdery appearance on the surface. Common washing soda exposed to the air affords a good illustration of this phenomenon.

The presence of efflorescence is a good evidence that the wall is neither impervious nor dense. Rains frequently drive moisture into porous walls, and when the walls dry out, the water returns to the surface, carrying with it carbonate of lime and other soluble material.

These salts are deposited on the surface of the wall, thereby producing unsightly blotches, not readily removed.

Efflorescence in new work may be avoided by care in making good concrete. In old work, however, where trouble has been experienced from the beginning, the walls can be cleaned by the use of acids, and then treated by a solution of soap and alum.

Such work should be undertaken only in dry weather.

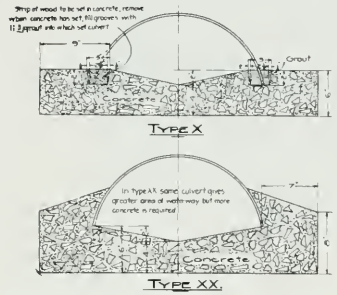
The acid treatment consists in washing the walls with a solution of one part muriatic acid and three parts water. After this solution has been allowed to remain on the wall a few minutes, it is removed by thoroughly scrubbing with several changes of clean water. The face is then painted with a solution of boiling hot soap solution made up of ¾ pound laundry soap or home made soap to one gallon of water, followed after a lapse of 24 hours with a solution containing 2 ounces of alum per gallon of water applied at medium or ordinary temperature. The wall should be practically impervious should this process be repeated after 24 hours. However, in some cases the treatment may have to be repeated several times to insure success.

A porous wall is costly at any price and can scarcely ever be made satisfactory.

Being careful to make good rich concrete, well proportioned, well mixed and placed under proper conditions, trouble from porousity and efflorescence may be generally avoided.

Corrugated Iron for Low Arch Culverts

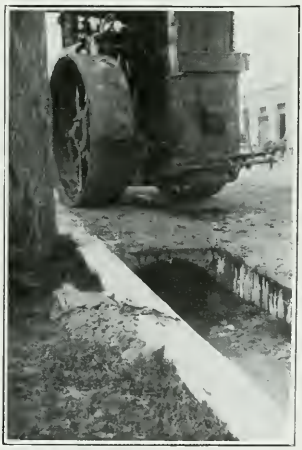
By B. M. MARSHALL.



Shows methods of installing part circle corrugated culverts

ONE of the serious problems which has to be met by municipal and railway engineers is that of drainage at street intersections where the crowning is so slight as to afford but very little headroom. Any form of construction which cannot bear the stress of heavy loads and jarring impact without the protection of ample covering is absolutely negatived by the conditions, for it is often the case that from two to three inches is the most that can be had. Concrete water-ways covered with railroad iron or steel slabs are, in one sense, a solution; but the cost is all but prohibitive; and while building for the distant future is commendable on general principles, there are very many American cities where half a hundred plans of improvement are clamoring for attention at once, and where, therefore, the engineer must seek for methods and materials which represent the golden mean between flimsy cheapness and impossible expense.

Generally speaking, corrugated iron culverts call for a covering of six inches or more, and, in the ordinary gauges (sixteen and fourteen), will withstand the strain of traffic when so protected; but the surprising strength of this material in proportion to its weight, and the quality of elasticity which is, in this field, its exclusive possession, and which renders it almost immune from injury by shocks or jars, point strongly to its use under severer conditions. It is of course apparent that heavier gauges should be employed. Twelve gauge corrugated iron is enormously strong, and is giving perfect service in many difficult situations, but the lower the arch in proportion to its width the larger is the circle of which it forms a part; and when this circumstance is considered in connection with an extreme thinness of covering and the heavy, miscellaneous traffic of a city street, an iron of number ten gauge (9-64 inch) in thickness is no doubt the best investment.



Part circle, with 30-inch base and 7-inch rise at center, made of 14 gauge iron, supporting 14-ton roller. Culvert installed in city of San Bernardino

Care should be taken to see that the cement work is perfectly done, that

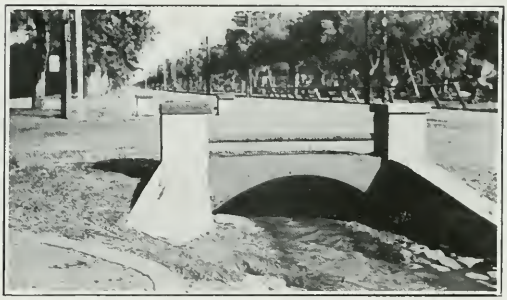
Corrugated culvert, 24 x 10 inches, installed in city of San Bernardino

the edges of the arch are absolutely reinforced, and that ample time is allowed for the cement to set before loads are permitted to pass over the culverts. The use of a light angle iron along the edges of the part circle involves but little additional cost, and is, to some extent, an insurance against the dangers of faulty installation.

The purest iron obtainable should be employed. The electrolitic nature of the corrosion of metals is now thoroughly established, and, as a con-

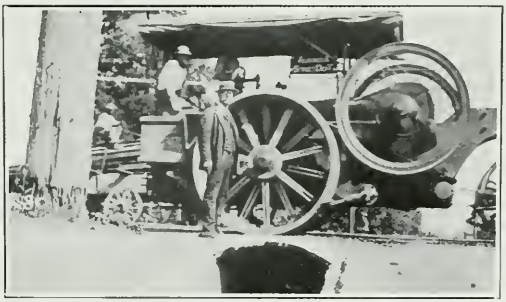
Part circle Culvert, 16 gauge, 14-inch base by 7-inch rise, 68 feet long, with two tees 17 feet long, at Sixth and Lime streets, city of Riverside

Corrugated iron culvert at Riverside, California, installed in front of famous Glenwood Mission Inn



A 96-inch by 12-inch part circle corrugated iron culvert, 14 gauge, installed by city of Ontario

sequence, the fact that the rapid corrosion of most modern iron and steel is due to the presence of impurities. Where an iron of a high degree of purity is used, corrosion is very slow, even after the loss of the galvanizing; and such as does occur has none of the pitted or "tubucular" character so familiar in the ordinary product after a comparatively brief exposure to the action of the elements.



Very flat arch of corrugated iron, 26-inch base, 4-inch rise, supporting 12-ton roller. Located at city of Alhambra, and replaces former plank top culvert with concrete sides. Extreme conditions prevail, there being but 4-inch covering over top.

If these recommendations are followed, we have in corrugated iron a practical solution of many of the difficulties encountered in the disposal of surface water in city streets.

* * *

Expansion and Contraction

Yes, heat expands. Does cold contract?
Not always, on the whole.
For proof of which go take a look
At that bill of yours for coal.

Electrolytic Corrosion of Steel in Concrete

THE possible danger to reinforced concrete structures from electrolysis began to be frequently mentioned five or six years ago. Since then a half-dozen laboratory studies have been made and the results published. These last experiments not only review and confirm the conclusion of previous experiments, that electric currents will cause failures in reinforced concrete, but they throw light on several matters not made clear in previous experiments. These are briefly the resistance to electric currents, or conductivity of concrete; the weakening effect, if any, on concrete, of passing electric currents through it; the possible efficiency of insulating coatings applied to the concrete or the reinforcement; the possible value of mixing or impregnating the concrete with some non-conducting material, etc. The experiments, in brief, tell us more of the possibilities of overcoming the danger of electrolysis than of the certainty and nature of this danger, and for this reason they are particularly interesting to engineers.

Reviewing the data at hand, we may feel certain that electric current may cause failure in reinforced concrete. The nature of this failure is not chemical, or at least not principally chemical disintegration, but is mechanical. Electrolytic corrosion of the reinforcement occurs, by which one volume of the original metal becomes 2.2 volumes of another substance, and this increase in volume ruptures the concrete surrounding the metal. It is clear that dry concrete is a fairly good insulator, and that its conductivity increases with the presence in it of moisture, and with the nature of the salts in solution with this moisture. It is further clear that the passing of an electric current through concrete does not materially affect its cohesive properties; that is, its compressive strength is not decreased by such action. These conclusions may be modified by further test data, but it is reasonable to believe that they will not in the main part be reversed.

With the nature of the danger to reinforced concrete of electric current thus definitely defined, one is in position to study methods of avoiding the danger. The authors of the papers contemplate several possible methods and present test data and discussions bearing on them. One method is to keep the iron negative in respect to the concrete, so that the current will be from the concrete to the reinforcement. This will accomplish the result desired; but it is a laboratory possibility only to secure the requisite conditions. Another method, which is likewise a laboratory possibility only, is confining the current to alternating currents of equal positive and negative wave forms. A third method, which seems at first glance more promising as a practical resource, is to render the concrete non-conducting by filling the pores with some non-conductor or by an insulating coating. Tests made with blocks treated by the Sylvester process (soap and alum) showed no particular value for the treatment. The possibilities for an insulating paint appear small in actual construction work; the concrete must be dry before the insulation is applied, the material must be completely insulated, and the insulation must remain intact and in good condition.

The three methods so far referred to for overcoming electrolysis are based upon the idea of either changing the nature or direction of the current or of securing a concrete which will be a perfect insulator. The next thought naturally is: Can the reinforcement itself be protected? Two possibilities of this nature suggest themselves. One is to coat the steel with some metal which will make the conduction of the current from the steel to the concrete metallic instead of electrolytic; the other is to cover the steel with an insulating compound which will cut off all flow of cur-

rent from the reinforcement to the concrete. The tests made to determine these possibilities give rather negative results. They indicate that an aluminum plated reinforcement may quite likely solve the problem, and that a paint has yet to be found which will be a perfect and permanent insulator, assuming that coating reinforcement with paint has no other objections.

At this point it is instructive to notice the results of the tests made to determine the effect of a paint coat on the shear or holding power of steel embedded in concrete. It seems likely that engineers will be loth to give up efficiency in holding power to the extent indicated, for anything less than a very serious menace not otherwise possible to escape.

Summarizing the facts which are presented by these laboratory studies, we obtain the general conclusion that electric current can cause electrolytic corrosion tending to destroy reinforced concrete, and that no practicable means as yet, offer themselves for presenting this corrosion where the dangerous current is present. Theoretically this appears to be somewhat appalling; practically it is not easy to work up a very high degree of terror over it. Like the corrosion of steel skeleton buildings so frequently prophesied some years ago, the possibilities for trouble are great, while the probabilities are neglible. An isolated reinforced concrete structure is not so very easily got at by electric current in a manner to cause grave danger. In the nature of things, too, the places where damages will occur are those where considerable damage in detail can occur without injuring much the integrity of the structure as a whole.

In the above connection, special interest attaches to the recently issued draft report of a standing committee of the British Concrete Institute, on the rusting of steel in concrete. The report is based on replies received in response to a circular letter sent early in 1909 to 1,000 engineers and others engaged in concrete construction, asking for the results of experience and investigation as to whether rusting of steel takes place when the steel is embedded in concrete. The following are the conclusions of the committee:

"Reinforced concrete will last as long as plain concrete in any situation, provided that certain special precautions are taken during its construction. The precautions to be taken are as follows:

"The materials (cement, sand, and stone) must be of good quality. They must be most carefully and thoroughly mixed and scientifically proportioned, so as to be practically water-proof and air-proof. The mixture must be fairly wet, and must be well compacted into position so as to minimize voids. The aggregate should be as non-porous as possible, and any aggregate which is known to have a chemical action on steel should be avoided. The aggregates should all pass through a ¾-inch mesh. The concrete covering should in no case be less than ½-inch; and it is suggested that if round or square bars are used, the covering should not be less than the diameter of the bar. In structures exposed to the action of water or damp air, the thickness of covering should be increased at least 50 per cent, or the size of the aggregate should be so as to insure a dense skin. In the case of structures exposed to very severe conditions, the concrete might be covered with some impervious coating, as an extra precaution.

"The reinforcement should be so arranged that there shall be sufficient space between one piece and its neighbor to allow the concrete to pass and to completely surround every part of the steel. All steel should be firmly supported during the placing of the concrete, so as to avoid displacement. It should not be oiled or painted, and thick rust should be scraped and brushed off before placing."—Engineering and Contracting.

The Edison Phonograph Cabinet of Reinforced Concrete

Concrete Furniture

RECENT newspaper interviews with Thomas A. Edison quoted the great inventor as saying that he could make concrete furniture cheaper and better than wood, and that such furniture would soon be on the market. Mr. Edison's attention had been drawn to this subject, the interview said, while experimenting with concrete phonograph cabinets, which have proved very successful. Embellished in the familiar newspaper style, the interview was featured by several New York City papers and aroused comment. The cartoonists seized upon concrete furniture with whoops of joy, and many amusing sketches were produced throughout the country.

If there is any objection to the publication of such articles on the part of those who are honestly striving to advance the cause of concrete, it lies in the impression created that Mr. Edison has "invented" concrete furniture and the insistence that such furniture will be "cheaper than wood," says a writer in Cement Age. Concrete lawn and garden furniture has been manufactured in this country for many years. Much of the workmanship has been of a very high order. It is not "cheap," however, except in comparison with marble or bronze, with which it competes. A concrete bedroom set is quite within the range of possibility, but to make satisfactory smaller articles, such as chairs, would seem to be a more difficult problem. At first thought this would seem to require a design so massive that few

A Brick School House With Cement Exterior, Pomona, California
Robert H. Orr, Architect

families would care for it. Concrete is fluid stone with most of the properties of stone and may be molded into practically any shape. There is, for example, the case of a builder who took a clay impression of a window sash of small panes into which he poured cement with entire success. He estimated the cost of a large window at less than $1, whereas the same thing in wood would have cost three times that amount. The excessive weight of the cement was the only objectionable feature. For this reason it seems unlikely that manufactured stone furniture for the living rooms will ever attain great popularity. It it does, it will have to be skillfully and carefully made, and it will hardly be cheaper than wood until the price of wood has advanced far beyond present cost.

* * *

Another Practical Fire Test of a Reinforced Concrete Building

A fire occurred in Philadelphia, on February 3, in the new reinforced concrete building of the Blabon Oil Cloth Works. Flames raged for hours, destroying several thousand dollars' worth of cork linoleum. The special matter of interest is that the building withstood the test in the same manner that every other building of like construction has done under stress of fire. It was practically unharmed, requiring only cleaning and minor repairs to broken glass before being re-occupied. So well did the structure which is four stories in height without floors, withstand the heat of the flames which raged from top to bottom for several hours that S. Loog, manager of the plant, declared after the fire had been etxinguished and he had made an inspection that no claim would be made on the insurance company for damage to the building.

Even the wireglass skylights on the top were found to be intact following the fire, and Mr. Loog declared that the debris could be shoveled out by a force of workmen and the building immediately put in service again.

The structure is fitted with numerous horizontal iron bars, from which is hung the drying linoleum. It is known as building No. 27 of the plant, and ten minutes after the fire had started the flames were raging from top to bottom, unobstructed by floors. A total of 91 pieces of the linoleum were hanging in the building at the time, and all of these were consumed by the blaze. Only a coating of ashes on the ground floor and the blackened walls inside showed that a fire had occurred.—Cement Age.

Senior Architect Answers Junior Architect's Interrogations

In the March number of the Architect and Engineer a letter was published from a junior member of the architectural profession, suggesting a "Junior Department," to be conducted by older members for the benefit of the "Babies." The writer propounded some interesting questions which he thought might be answered to the advantage of himself and fellow workers. Architect William A. Newman has generously volunteered to solve a few of these perplexing interrogations, his letter and answers to the questions, being printed in full herewith.—Editor.

The Architect and Engineer of California, City:

Dear Editor—The invitation in your March issue, "Can you answer these questions?" tempts me to send you a reply in good faith, although some of the questions seem to bear the marks of a practical joker.

This "Junior Department" could be made quite interesting, if they don't ask questions too hard to answer. I suppose they will soon be asking when the next raise in salary is coming along, or how to get the clients.

Sincerely yours,

W. A. NEWMAN.

Answers to Questions.

Q.—*Of what is plate-glass composed, and the proportions?*

A.—The following are the constituents and proportions for plate-glass: Fine white sand, 40 per cent; sulphate of soda, 13 per cent; chalk, 7 per cent; broken glass, 40 per cent; and a trace of manganese. This formula is varied by different manufacturers, who add traces of other elements to settle the impurities in the mixture.

Q.—*Concrete cellar floor is 7 feet underground on hillside; brick walls are thoroughly asphalted outside, yet are still too damp for servant. Please advise?*

A.—Tile drain at the bottom of foundation wall would probably correct the trouble. After examination of all pipes passing through wall, and after search for leaks in leader pipes and other sources, if trouble continues, roughen the floor and inside of walls and apply a ¾-inch cement coat mixed not less than 2 to 1, with the addition of proper proportion of a standard waterproofing compound in the mortar.

Q.—*What formula makes the best whitewash for basement concrete?*

A.—The following formula has given excellent results: 100 pounds lime, 5 pounds salt, 5 pounds boiled rice flour, 4 pounds tallow, with sufficient water to properly mix the lime. In lieu of the rice flour and tallow, some add 2 pounds sulphate of zinc, to prevent cracking.

Q.—*Is red lead as well suited for painting iron and steel work as other materials?*

A.—I, personally, am inclined favorably toward the use of red lead paint for structural metal. There are fads in painting as in everything else. Structural metal protected with red lead, which has not been painted for nearly forty years, is in perfect condition today in the roof trusses of the Mint. Quite a number of so-called graphite paints in this market will not stand up under the chemist's analysis. First-class red lead is a local product. (Makers too stingy to advertise.—Editor.)

Q.—*What is the tensile strength of hardwall plaster mixed according to manufacturers' specifications for applying to wall?*

A.—As this material is not used in masonry construction its tensile strength is of little practical importance. Tests show the tensile strength of hardwall plaster used in this city in accordance with the manufacturers' specifications to average 250 pounds per square inch in seven days, and 350 pounds in three months.

Q.—*Give a good and inexpensive method for repairing concrete walks without renewing entirely.*

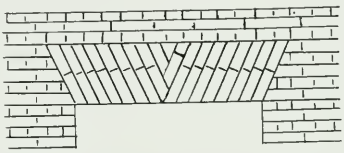
A.—If the damage is very small, such as may be seen generally throughout the burned district in this city, there is a compound, which may be obtained from the builders' supply houses, which it is stated when added will cause mortar to adhere to old work, thus permitting of small thin patching; otherwise the surface of the old work would have to be roughened and a 1-inch or 1½-inch finish coat applied.

Q.—*Leaks continue in reinforced concrete building, flat roof, covered with five-ply felt. Advise me.*

A.—Examine all outlets, pipes passing through roof, and flashings. Dampproof the walls, sides and top. Mop over the roof, or such sections where leaks occur, with hot asphalt. In one case where tile covered the felt, and earthquake damage to the felt was suspected, it was necessary to coat the underside of the concrete roof construction.

Q.—*What is known as a French arch?*

A.—An English authority gives the following sketch as a "French" arch, sometimes adopted in walls to be stuccoed or plastered, also as relieving arches, but the construction is not theoretically good.



Q.—*What tests apply to determine if concrete is damaged by freezing?*

A.—Concrete mixed as specified in the local building laws is not hurt by freezing. Damage is due to alternate freezing and thawing. Cut out sections where damage is suspected for examination and analysis. Put on a load test where practicable.

Q.—*What marble is most suited for exterior use on the shady side of street?*

A.—California marble. It is sound, hard, and keeps its polish. You should be able to pick out any color desired to suit the position and color scheme of the building. Use it on the "sunny" side as well.

Q.—*Does the United States reject certain brands of local cement?*

A.—The supervising architect for the Treasury Department rejected one local brand proven light in specific gravity. This particular brand of cement was, however, satisfactory to the architects who won the Custom House competition in this city, and was used in that work.

Q.—*What is the formula for cast-iron cement for filling sand pitting and leaks in castings under water pressure?*

A.—The formula required is to be measured by weight: Powdered cast iron, 98½ per cent; flour of sulphur, ½ of 1 per cent; sal-ammoniac, 1 per cent. The time for setting may be decreased by doubling the quantities of sulphur and sal-ammoniac.

Q.—*What are foots in linseed oil?*

A.—The settlings at the bottom.

Q.—*Is diagonal bond a good one for securing facing brick?*

A.—Not, in my opinion, for a locality subject to earthquake shock. The face brick which fell away in the court walls of the St. Francis Hotel in 1906 is an example of this bond.

With the Contractors

San Francisco's Experience with Contracts on Public Work

By WM. E. HAGUE.

DURING the last two years the San Francisco Board of Public Works in awarding contracts for the erection of public buildings, has tried out the methods of letting work as a whole and of segregating it. Their experience will undoubtedly be of interest to architects and builders.

It was found that where the work was let by segregated contracts for the several branches involved, numerous delays occurred, chiefly owing to disputes between the different contractors. It also developed that the expense of supervision was very largely increased, that a great deal of money had to be spent for extras for work left out and that a voluminous correspondence was involved in settling the various disputes.

Where the contract for the work was practically let as a whole the building progressed to completion with less friction and delay, less expense was involved for supervision and there was less trouble and correspondence in the architect's office. The result was that in many cases the building was actually completed on time, whereas some of the buildings being erected under segregated contracts have taken as long as two and one-half years to complete, and have, at that, proven to be poorly finished buildings.

In the case of one of the large schools: During the course of its construction the contracting plasterer, who had a segregated contract for his work, requested of the Board of Public Works, and was granted, a two months' extension of time. The result was that the whole work of the building was tied up waiting for the plasterer to begin his work, and, of course, every contractor on the building had his money tied up during that period, and the general contractor was obliged to pay a watchman during those two months—money which he would not otherwise have had to pay out.

The City Architect's office has stated that it is unequivocally in favor of letting the entire work for a building under one contract; and this is not from any personal prejudice in the matter one way or another, but because practical experience has proven conclusively that the only way to have a public building erected is by a general contract.

A point which has deceived the city, and is today deceiving many owners, is the apparent saving of cost by segregating the contracts. It is, however, a fact that many of the best architects of this city who keep careful track of the cost of their work, have found that it is a saving to themselves to let the work as a whole, and also that it is a saving to an owner. Take, for instance, an average class "A" or class "B" building being erected down town: In the first case, when segregated bids are taken it might appear to

the architect—if he resorts to the much-to-be-condemned method of taking bids both segregated and as a whole—that there was a saving in price, as the total of the two classes of bids will frequently show that the amount of the segregated contracts is less than the bid for the work as a whole. As the construction progresses, however, the architect will find himself put to very considerable expense to properly supervise the work—an expense which directly eats into his own personal profits. That will be the result if he properly supervises the work, but if he resorts to the method quite frequently employed by the cheaper class of architects—of making the so-called general contractor supervise the whole work on the building in return for being given several different branches of the work, he may thus save his pocket, but he is certainly working an injustice on the so-called general contractor.

The general contractors of this city realize, however, that the architect himself is often placed between the devil and the deep sea in letting his own work. From a careful canvass of the situation it is quite evident that the majority of the architects prefer to let contracts for their work as a whole, but the tip has gone out to the owner, from the cheap architect, that he can save money by having the work on his building segregated, and he insists that bids be taken accordingly. It also happens very frequently that he will not pay the architect an extra commission for segregating the work. The architect is thus out of pocket himself, the final result will show that the owner has not saved any money and has an inferior building on his hands to lease in a city which is in fact the most modern and best built of any in the United States; and a poor building is the poorest investment the owner can make under the circumstances. If the architects could be induced to take a stand on this matter and insist on letting their work as a whole, working in conjunction with the members of the General Contractors Associaton, much good might accrue to both; and certainly the profits of the architect would be increased and his business facilitated.

There are, of course, many sides to this question, and a few of the architects who are segregating their work state that they are doing so because they believe it is the most satisfactory way of letting it; but these men, with few exceptions, have not had a very long experience as to the final results obtained under that method. Such architects sometimes state that the general contractor does not properly supervise the work and allows the specialty contractor to bother him with every dispute which may come up between him and the general contractor. The answer to this difficulty must be very plain to all. The architect should be careful to whom he lets his work and select a man whom he knows will properly supervise the work for him, thus saving him time and the owner money by pushing the work to a rapid conclusion by not being delayed through disputes; and the same thing applies to the city and county of San Francisco.

The General Contractors Association has adopted a sub-contract form for use of the general contractor in sub-letting work. The adoption of this form is an important step in the right direction, as the general contractor is fully protected under the form in question and can force his specialty contractor to proceed without delay. This does not mean that the form is too stringent in its clauses, as it has been approved by the specialty contractors themselves in the Building Trades Employers' Association; but it does mean that the general contractor has a proper contract with his specialty contractor, and the business relations of the two are thus placed on a proper business footing. Under the old practice of sub-letting the work by a bid given by the sub-contractor on the back of a card numerous unavoidable

delays occurred. As a protection to the architect I would suggest that he insist on the general contractor using this form, and, of course, if the contractor is a member of the General Contractors Association he will be using it without having to be requested to do so, as he realizes that a proper and sufficient contract is a good protection for him in his business.

These points will appeal particularly to the architects who are members of the local Chapter, who have discussed their difficulties at their meetings and have adopted standards for the profession. If the members of the Chapter of Architects look to the members of the General Contractors Association only for bids on their work, the result would be bound to be beneficial to them, as the contractors who are in a good organization where the ethics of the trade are being continually taken up and efforts made to regulate the business and place it upon a higher moral and business plane, have some standards to live up to, and will do their best to be a credit to the business in which they are engaged.

The word has gone out that the general contractor puts ten per cent on all his work for profit. This is not by any means the case, as unfortunately the general contractors in San Francisco today are not making, in many cases, more than three or four per cent on their work. That is not really a sufficient profit to warrant the risk they take in their buisness, but it is, nevertheless, all the profit they are making at this time, and the owner should certainly be willing to allow a four per cent profit to the general contractor on his building.

Another point for the architect to bear in mind is the class of work which is practically being specialized in by many general contractors. There are many who prefer a big class "A" or class "B" building, there are many who prefer flats or apartment houses and there are many who prefer high-class residences. These men can easily be selected by their worth in the different classes of general contracts, and if an architect desires information as to the names of general contractors who practically specialize in any one of these different classes of buildings, such information will be gladly furnished by the Secretary of the General Contractors Association, and perhaps such information might be of considerable use to an architect who is not very familiar with the builders. There is still another class of general contractor; the one who will go after any kind of work he can get and take it at cost or nearly at cost and trust to beating the specialty contractor, the architect and the owner for the profits he will make. It is unnecessary to state that such a man is to be avoided on all occasions. The unbiased consideration of the situation as a whole brings the logical-minded architect and builder to the conclusion that the business could be elevated and the profits reasonably increased for all through a little co-operation and better understanding between the architects of the local Chapter and the members of the General Contractors Association.

* * *

"Keying" Advertisements

Keying an "ad" and paying a clerk to keep tab on "inquiries" is good business in a ten-cent mail order proposition, but doesn't work out on anything bigger. We know a wall-board man who got 480 inquiries from a farm journal "ad," sent out a stack of catalogues and booklets, chased follow-up letters out in one-two-three order and has yet to sell a single foot of the board to any of the idle curions who answered his advertising. The same manufacturer got but two inquiries out of an "ad" in a building magazine, but sold both parties.—The Builders' Guide, Philadelphia.

Reinforced Concrete Store and Office Building, Victoria, B. C.
Jesse M. Warren, Architect

San Francisco Boy Designs Victoria Building

SAN FRANCISCO friends of Jesse M. Warren will be interested in learning of his success at Victoria, B. C. Warren has an office in the Sayward building in that city, and is the architect of one of the largest concrete buildings now under construction there. As shown in the accompanying cut, the building is six stories and designed for stores and offices. Mr. Warren is a native of San Francisco, having been employed in the offices of E. J. Vogel, Bliss & Faville, William Curlett & Son, Stone & Smith, and Oliver & Foulkes.

* * *

Unique Refrigerating Plant for Residences

J. O. Taft, a Seattle architect, is finishing sketches for a complete refrigerating plant of his own design, and for which he has secured patent rights. It is claimed the plant can be installed in residences and apartment houses at a cost of not more than $50, and can be continually operated at a cost of between 3 and 5 cents per day. The meat market systems can be installed at a cost of $150 and upwards.

* * *

Sordid

"Don't you think, Senator, the Panama Canal tolls ought to be high enough to pay a good interest on the investment?"

"Not necessarily; a $6,000,000 battleship is generally considered to be worth what it costs, yet it never pays any interest on the investment."

Efforts Toward Surface Finishes on Early Concrete Bridges

By HENRY GRATTAN TYRRELL.

MY attention has recently been called to the efforts made by some of the early builders of concrete bridges to produce satisfactory surface finish on their works, and as the particular instances referred to here may not be familiar to all engineers, I have taken the trouble to write them down for others.

It is, of course, well known that the Romans made extensive use of concrete in the body of their piers and arches, the surface being faced with tufa and travertine, their constructive methods and the details of their anchors being plainly visible on the part of old Ponte Rotto which still remains. The same system of construction was extensively used on public works during the latter half of the eighteenth century and the first part of the nineteenth, but it was not until 1840 that a bridge was made almost wholly of concrete, at Grisoles, in France. It was the work of the eminent French engineer, M. LeBrun, who erected a span of 39′ 4″ over a branch canal of the Garonne. The only place where material other than concrete was used in this bridge, was in the exposed end of the arch ring which was faced with brick, and at the four vertical abutment edges below the springs which were faced with stone. All other exposed parts including the soffit and spandrels were of concrete. Ten years after the completion of this little bridge, the building of the Grand Maitre Aqueduct in France was begun, the construction of which continued for fifteen years. The long series of arches carrying the aqueduct were made wholly of concrete, the magnitude of the undertaking being hardly surpassed by any later works. The surface finish on this aqueduct, however, was not satisfactory, for when concrete arches were again used in France about 1855, on many fine bridges, some of which are masterpieces of constructive art, they were faced with stone in a method similar to that employed by the Romans. These bridges include Ponts au Diable, Austerlitz, Notre Dame, Napoleon, Invalides and Alma. Experimental treatment of arch faces was again tried in 1868 when a 75′ concrete span was erected near Gloucester Road Station over the Metropolitan Extension Railway, London, the arch face being lined to represent ashlar. This attempt at imitating stone was not satisfactory, and has not since been greatly favored. It was found, however, that while bridges with concrete faces appeared to be aesthetic failures, they could be quickly built at small cost, and for several years following 1873 they were generally used in Ireland by Nathaniel Jackson, for spans of 18′-45′, for highway crossings in the rural districts, and on private estates. It appears therefore that many of the methods recently used for producing satisfactory surface finish on concrete bridges, were tried by others more than forty years ago, before this type of construction came into any general use, and at least twenty years before the construction of the first concrete bridge in America.

* * *

The Word "Fireproof"

Do not be fooled by the word "fireproof." Until we write on slabs of steel, sit on chairs of asbestos, wear shoes of concrete and trousers of tin, absolute fireproofing is impossible. A powder mill might be fireproof in construction, yet people are not in the habit of making it a smoking room. When you hear "fireproof construction," remember that many things are only skin deep—the contents count.—Grinnell Automatic Sprinkler Bulletin.

Among the Architects

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Coast League Convention

The second annual convention of the Architectural League of the Pacific Coast was held in Los Angeles, with President A. F. Rosenheim in the chair, April 10-12. Following was the program:

Convention called to order at 10 a. m. by president of the League. Address of welcome to delegates, visiting architects and other guests of the League by Mayor Alexander or his representative. Address of the president, Mr. A. F. Rosenheim.

Appointment by the president of committees to which reports, addresses, etc., are to be referred, including the following: (a) committee on credentials; (b) committee on president's address; (c) reports of executive council committee; (d) committee on reports of standing committees; (e) committee on special committees; (f) committee on resolutions; (g) committee on nominations; (h) committee on constitution and by-laws; (i) committee on time and place for next convention; (j) committee on auditing.

The Executive Council to report on the following: (a) membership; (b) finances; (c) method according to which the League proposes to conduct and control ateliers; (d) method of holding competitions among League students; (e) plan for judging drawings and prizes to be offered, including the grand prize.

Paper—"The Seattle City Plan," by Carl F. Gould, Seattle.

Paper—"Rationalism of the Twentieth Century Architecture," by G. Albert Lansburgh, San Francisco.

Discussion of the State law of California requiring all public buildings to be submitted to competition. Subject introduced by Mr. John C. Austin, president of the Southern California Chapter, A. I. A.

Addresses by representatives of several chapters and clubs constituting the League.

Theater party as the guests of the Southern California Chapter and the Los Angeles Architectural Club.

Committee reports on the following: (a) delegates to the convention; (b) president's address; (c) executive council; (d) standing committees; (f) resolutions; (g) nominations; (h) constitutions and by-laws; (i) time and place for next meeting; (j) auditing committee.

Papers—"Historical Precedent in Pacific Coast Architecture," by Mr. Chas. H. Alden, Seattle. "The Future of Architecture on the Pacific Coast," by Mr. John Galen Howard, San Francisco.

Personal

Architect A. S Heineman, of Los Angeles, has moved from the Hibernian building to the eighth floor of the San Fernando building, Fourth and Main streets, having taken a suite of seven rooms, 827 to 833, inclusive.

T. Beverly Keim, Jr., & Co., architectural engineers and designers, have moved from the Wright & Callender building to a suite of rooms, Nos. 236-7-7½-8-9 Title Insurance building, Los Angeles.

A. Schulze, son of Henry A. Schulze, the well-known architect, who has been in the office of Architect Frederick H. Meyer, San Francisco, for some time, has gone to Honolulu, having accepted a tempting offer from Architects Ripley & Reynolds, former Oakland architects.

Says All Sky-Scrapers Are Fire Traps

The feature of the annual dinner of the New York Art Societies last month was the address of Ernest Flagg, president of the Society Beaux Arts Architects, who made the statement that there is not a fireproof building in New York; that every sky-craper in the city is a fire trap, and that some day there will come a fire disaster that will awaken the people of the country.

"The amount of wood used in our sky-scrapers is appalling," he said. "Our high buildings are put together like a stove, with the elevator shafts acting as draft vents."

Architect Coulter Busy

Architect Norman B. Coulter of San Francisco has plans completed for two buildings for Thomas Q. Swortfiguer, one a $75,000 reinforced concrete building and the other a $25,000 class C building, both to be erected in the same block on McAllister street, near Post, San Francisco. Mr. Coulter has other work in his office which will keep him busy for some little time.

Annex to Hotel Argonaut

Architects William Curlett and Son of San Francisco are preparing plans for a 300-room annex to the Hotel Argonaut in Fourth street, between Market and Mission streets, San Francisco. The addition will be seven stories and will cost close to $300,000. Work will be started as soon as the drawings can be finished.

Santa Barbara Normal School

Plans for the new Santa Barbara State Normal School have been completed in the office of the State Architect in Sacramento.

The plans call for a concrete structure in Spanish style. The building will contain twenty-five classrooms, and will cost $150,000.

Names of San Francisco Architects Impress Portland Visitor

Portland, March 20, 1912.

Editor The Architect and Engineer:—When I joined that "Oregon First" party I did so hesitatingly, for with an office full of pressing matters I felt that sacrifice even for civic duty has its limits. But when I was afforded an opportunity of meeting your local architects, I felt repaid at once. In my regular business walks I get tired of conventionalities—the same people—the same routine of life—the same narrow range of names, etc. In your beautiful and prosperous city, however, I found people of varied nationalities and costumes, an unique program of social and business life and a rather remarkable assortment of names. In the last particular, my interest was especially aroused. At first I thought that your beautiful scenery had suggested many of these names, as I met a Baur, a Blohme, a Garden and a Wood, not to speak of Havens, Knowles, Banks, Martens and Beese.

Some Foulkes in our party, however, said that your predilection to sport had much to do with this natural selection and referred to the Hunt, Colley, Hind, Hart, and Lyon. This last surmise, however, was scouted by our Headman, who said that eating dominated the local situation so noticeably that the choice of names must have been one to this propensity. He adduced in support of this the fact that you had a Coffey, a Bakewell, and Brown, a Hatch and a Fry, not forgetting De Martini. A lady of the party submitted a "Minority Report," claiming that it was either dress or literature which stood sponsor and was responsible for the nomenclature. In the former class, she could only refer to a Coates and a Dickey, although she tried to ring in Curlett and Krimpell, McCall and two Mohr. In the latter class she made a much better showing, for she had Holland, Holmes, Russell, Parker, Carey, Scott, Rousseau and Young, without forgetting "Captain Kidd" and "Two Weeks."

Although I do not sign this note from Farr off Portland, I am not trying to Dodge, for I know some one will Rushforth and identify me and then the last man named will be the Sexton.

THE TALL CONTRACTOR.

Honor for a San Francisco Boy

H. M. Michelsen, with Architects Bakewell & Brown, of San Francisco, and a member of Mr. Brown's atelier of the San Francisco Architectural Club, was named second alternate among those notified to enter the second preliminary competition for the ninth Paris prize, conducted by the annual committee on Paris prize of the Society Beaux Arts Architects. J. E. Stanton, formerly of San Francisco and now of New York, was placed first by the committee.

Noted Artist to be an Advisor

Joseph Pennell, an etcher of world renown, and considered one of the leading artists, has come to San Francisco by invitation of C. C. Moore, president of the Panama-Pacific Exposition. He has been asked by the exposition directors to act in an advisory capacity and give them the benefit of his knowledge of architectural designs.

Pennell came direct form Rome via Panama and will be in consultation with the exposition officials for some time. By taking the route across the isthmus the artist was able to do some sketching in the canal zone, and this work will appear in magazines in this country and Europe. He is a constant contributor to London Gossip and the Strand, and a large number of American publications. He was on the jury of awards at the recent exhibition of arts in Rome, and is considered an authority on designs.

Besides winning fame by making etchings such as "London and Fog" and "Pittsburg's Smoke," Pennell has won a number of first prizes at the expositions in Paris, Buffalo, St. Louis and Chicago. One of his best known series is "Cathedrals of Italy."

Sympathy for Architect Buchanan

Architect C. W. Buchanan, of Pasadena, has the sympathy of many friends in his hour of sorrow. A few days ago word was received that his son-in-law, a professor of chemistry at Berkeley, was suffering from a severe attack of appendicitis and an operation was necessary. Mrs. Buchanan left for Berkeley immediately, and Mr. Buchanan followed a few days after, on receipt of news that the operation would probably result unfavorably. Before Mr. Buchanan reached Berkeley his son had died. Mr. Buchanan's father is also seriously ill.

Costly Mansion for Jos. D. Grant

Architect Lewis P. Hobart, of San Francisco, is preparing plans for a $500,000 country home to be built at Hillsborough for Joseph D. Grant, the capitalist. It is understood that the house will be fashioned after an old English manor, presumably of the Tudor period, which, in the setting of Hillsborough oaks, will be an appropriate model for a country residence.

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Without desiring to preach, we may be permitted to say that Architecture stands foremost among the Professions for its illustrious origin and its honorable history.

THE INTEGRITY OF THE ARCHITECTURAL PROFESSION

For centuries it has withstood all attempts to drag it from its eminent position among the Arts. Its greatest danger today is from commercialism. The relation of an architect to his patron should be as sacred as that of the Priest to the Penitent or the Lawyer to his client. Drafting and grafting should not be synonymous. A fixed percentage should cover his profits and more than this savors of evil. Whether it is in rebates, rake-offs, premiums, royalties, bonuses, dividends or what-not, the taking of an underground consideration Lorimerizes a noble calling. It is true that the patron is often hard and arbitrary and tries to make of an architect a loan broker, an oppressor of labor and an adept at sharp practices in making contracts or evading building laws, but one wrong does not right another. The architect who accepts other consideration than his rightful fee soon becomes a marked man, one who is the target for the satire of the material men and the contractors and is bound ultimately to lose the confidence of his clients. A few dishonest members of any profession will throw discredit upon the entire circle, and this fact should increase the feeling of individual responsibility. No matter if the material men do scheme to lower the quality or the contractor tries to impose poor workmanship or cause needless delay, it is one of the legitimate duties of the architect, either by his own watchful efforts or though experienced testing Engineers and Chemists to detect, correct or prevent these frauds or wrongs. If, however, the architect's own integrity can be assailed, if he lets down the bars of rectitude and becomes a party to graft, then he is ill-equipped to cope with dishonesty

in others and has degraded a profession which should stand for high principles and never failing uprightness.

THE MINIMUM WAGE

The force of public opinion is being exerted both in England and the United States toward securing by legislation "a minimum wage" for the laboring classes, although nothing is said about the length of the day or the minimum production. A most excellent idea—but why limit it to the man, woman or child who toils physically when so many mental toilers are equally deserving? The poet, artist and actor are too often stranded on life's highway—not because they have not put in a full measure of effort, but because an unappreciative public declines to "come through" with the needed cash. Here is where a "Paternal" government could step in. It can dictate terms to the public, so that even the most trembling aspirant can draw his "minimum" fee. Even the poor Editor will have a show and we urge that his "minimum wage" be not fixed too low, so as to shut off his pipe and grog.

With an elastic law, the contractor, who has had to figure so often at a loss, will see a golden era before him, when Uncle Sam will protect him and see that he makes a living profit. And even the deserving architect (whose work so often fails to be immortalized in brick or stone) can invoke the Majesty of the Law upon the hesitating client and insist upon a "minimum" sum which will at least defray his various Institute, Association, and club fees.

One grows enthusiastic as he begins to realize the possibilities of this new movement. It is a sort of endless chain and the only problem is "who finally foots the bill?" But what's the use of worrying? Let us take the Manna as it falls and trust Congress and Parliament to keep up the supply.

Southern California Architects' Chapter

A campaign for the repeal of the law of 1872 requiring architectural competitions on all public buildings, including school houses, has been inaugurated by the Southern California Chapter of the American Institute of Architects. At the last monthly meeting, the committee on permanent legislation, consisting of Messrs. Octavius Morgan, John P. Krempel and A. C. Martin, was instructed to take up the matter and to secure the co-operation of the Northern California Chapter. The committee was also instructed to take up the matter of securing amendments to the Burnett tenement house law at the next session of the State legislature, and with a view to aiding the movement two members were added to the committee, Messrs. J. J. Backus, chief inspector of buildings, and H. M. Patterson.

Mr. T. A. Eisen delivered an interesting address on "The Relation of the Institute to the Chapter," which was followed by a discussion in which Messrs. Myron Hunt, A. F. Rosenheim, John P. Krempel, T. Franklin Power, H. M. Patterson and others participated.

Mr. J. Lee Burton, one of the oldest members of the Chapter, was elected to life membership. Mr. Burton is now at the Soldiers' Home at Sawtelle.

Specifications for a Good Engineer

"A good engineer must be of inflexible integrity, sober, truthful, accurate, resolute, discreet, of cool and sound judgment, must have command of his temper, must have courage to resist and repel attempts at intimidation, a firmness that is proof against solicitation, flattery or improper bias of any kind, must take an interest in his work, must be energetic, quick to decide, prompt to act, must be fair and impartial as a judge on the bench, must have experience in his work and dealing with men, which implies some maturity of years, must have business habits and knowledge of accounts. Men who combine these qualities are not to be picked up every day. Still, they can be found. But they are greatly in demand and when found they are worth their price; rather, they are beyond price and their value cannot be estimated by dollars."—Chief Engineer Sterling's Report to the Mississippi Levee Commissioners.

"Suburb Beautiful"

Architect Elmer Gray, of Los Angeles, has been selected to prepare an illustrated article on "The Suburb Beautiful on the Pacific Coast" for Scribner's magazine, and is gathering material.

State, County and Municipal Engineering

Good Roads—Water—Sewers—Bridges—Fire Protection

Efficiency in Municipal Engineering

THE municipal engineer and his assistants, as a class, are not rarely considered by the general public, the business man and other engineers as being less systematic, capable and energetic than engineers in private employ. In fact, previous employment by a city has occasionally been found detrimental to a man who desires to make a change, says a writer in The Engineering Record. There is much less reason for this opinion today than ever before, but as it is an opinion which still finds expression it is worth while considering it from several points of view.

In some municipal engineering offices there is little attempt to secure an efficient and well-balanced organization, with the duties and responsibilities of its members sharply defined. The men in higher authority either endeavor to do much of the detail and routine work, themselves, and thus have insufficient time to consider thoroughly the larger problems to which their attention should be directed, or they leave the details entirely to assistants who do not have an adequate sense of responsibility and have not developed a capacity to carry on work without close supervision. Sometimes this is due to inadequate appropriations for the work and sometimes to the many calls on the time of the city engineer and his leading assistants.

As for the office records, they are not always kept systematically. Field survey books and estimates are occasionally useless to all but the man who did the original work. Plans of the location of gas and water pipes, electric and telephone conduits, and sewers are often incomplete and incorrect. Property and street lines are not referred to well established points, thus opening the door to future litigation. These conditions are often deplored in the reports of city engineers and appropriations asked for remedying them, but the public does not read these reports and assumes that the engineer is responsible.

Delay and expense in conducting the business of the office are especially likely to be noticeable in the preparation and supervision of work to be done under contract, owing to lack of office system. The designs of an incinerating plant were once assigned to three different departments at the same time, neither of which was given full information upon which to base the design, and after a period of confusion the work was entrusted to one department to carry to completion. On two other works of considerable size, one a pumping station and the other a reservoir, engineers were engaged on design for over two years in each case, when a few months at the most would have been ample time for this work. This delay could only be charged to the lack of proper decision on the part of the higher authorities.

The young engineer has a tendency to design special apparatus when standard equipment will answer the purpose well and possibly be better adapted to the work. This may be due to his lack of knowledge of what can be obtained from regular stock, or it may be the result of a frame of mind revealed by a designing engineer who, upon being criticised for his practice in this particular, remarked, "it would not be real engineering to adopt standard articles for important work." No one should be criticised for attempting to improve upon what has already been done, but the engineer should look upon such matters as a business man does, and not spend time and money in this way unless the probable increase in the efficiency and durability of the apparatus will give ample returns for the time and money thus expended. These things are well known, yet there has not been that same watchfulness in public offices to keep the designing force under careful supervision that is observed in private undertakings.

Detailed cost records are not kept in many municipal offices, and those records which may be kept leave the costs covered up with all other expenses of the office. In making up an estimate of the cost of a piece of work to be let by contract, the engineer computes with all possible accuracy the quantities under the various items of work and their probable cost to the contractor plus his profit, and to the total of these amounts he adds a lump sum of 10 or 15 per cent as the cost of engineering and contingencies. In other words, he goes into

minute details of construction costs, but lumps his own expenses in a single big item, whereas if he were the engineer for private parties he would probably be asked to itemize his own work of design, field supervision and the inspection of materials. The engineering costs are not a large percentage of the total cost of most important works. No matter how carefully engineering cost records may be kept they can hardly be expected to bring about any material decrease in the ratio of the engineering costs to the expense of the whole undertaking. But they would surely be of considerable value in showing the efficiency of the men in the office and the field and in pointing to reasons for delay in getting out work. Most of all, they would impress upon the whole staff the need for earnest efforts to give the highest returns to the public which employs it for the money invested in its services. This incentive to efficiency, which is found in some form in every good business organization, is not so evident in public engineering offices.

A Sign of the Times

Efficiency is the watchword today, which dominates all lines of work whether of public or private interests. There was a time, however, when the demands upon those entrusted with the care of public highways was not what it is now. There was little definite knowledge of road construction, and the general public were indifferent to the necessity of well maintained roads.

Road betterment and extension is today a live issue, and the taxpayers are showing an intelligent interest in this important question. Discussions of the ways and means of improving the country's roads are to be found in the newspapers and the periodicals, on the floors of special conventions and the legislatures.

At a meeting of the Arkansas Good Roads and Drainage Association, in Little Rock last month we find, among the list of subjects considered, the following:

"Good Roads as Affecting Land Values."

"Culverts and Bridges."

"Relation of Drainage to Good Roads."

"Financing Good Roads."

"Good Roads the Farmers' Best Friend."

This is a sign of the times; an indication that men now feel it necessary to know the best methods, so that they can render efficient trustworthy service to the county and State. Citizens now hold road officials responsible for improvements being made on the roads, and there is always sufficient published engineering and expert experience available for the proper construction of roadbeds, culverts and bridges.

For Tunneling San Francisco Bay

H. S. Wooley, of San Francisco, has left for Europe to interest Holland capitalists, with whom he has had previous financial dealings, in a plan to construct a tunnel under the San Francisco Bay from Oakland to San Francisco. The plans and specifications for the tunnel have been prepared by Taggart Aston and W. A. Cappell, engineers, and the estimated cost of the project is $25,000,000.

The plans call for the tunnel to be lined with steel, and it will be like an immense steel tube. It will start in Oakland from some place near the Mole and follow a direct line across the Bay. It is proposed to have the tunnel continue as a subway up to the center of the city, with electric elevators at designated cross streets to lift the passengers to the surface.

The engineers say it will take three years and a half to complete the project. They hope to have it completed for the 1915 exposition.

New Lien Law Invalid

A decision of far-reaching importance to real estate owners, builders, contractors and building laborers has been handed down by Judge Thomas F. Graham, of San Francisco, who holds that the new mechanics' lien law, passed by the legislature in 1911, is unconstitutional.

Only a small amount of money was involved in the suit in which Graham's decision was made, but the question is one of such vital importance to every contractor and owner in California that the California Building Law Association has engaged Lloyd S. Ackerman and H. A. Jacobs to carry an appeal to the supreme court and gain an absolute and final settlement of the point.

The case arose on a lien filed by the N. O. Nelson Company upon the property of W. J. Brown, wherein the subcontractor, the Golden Gate Plumbing Company, had failed to pay for supplies that went into the building.

The plaintiff company brought suit to recover on their lien against the bondsmen, the Fidelity and Deposit Company of Maryland, who had furnished a bond in 50 per cent of the contract price in accordance with section 1183 of the code of civil procedure. The question of constitutionality arose on demurrer, and the court decided for the defendant on a variety of contentions, among them being that the owner was liable under the law to persons with whom he had no contractual relations and also under the federal constitution which provides that one shall not be deprived of his property without due process of law.

HEATING AND LIGHTING

Plumbing and Electrical Work

Warm Air Heating the Most Satisfactory for Residences

THERE are but three practical systems of heating based on the indirect method, namely, indirect steam or vapor heating, indirect hot water heating and warm air furnace heating.

Of these systems the warm air furnace system, properly installed, is the most practical system for heating and ventilating 999 of every 1,000 residences.

The indirect steam or vapor or hot-water radiation systems have no real advantages over the warm air furnace system for heating and ventilating residences. In fact they have many disadvantages, such as cumbersomeness (occupying as much as 35 per cent of all the space in the basement), difficulty of operation, extravagant fuel consumption (50 per cent of the 100 per cent more than good furnace heating), high cost of maintenance and excessive first cost (twice the cost of direct radiation heating), difficulty of humidifying the air.

In contrast to these disadvantages of the indirect radiation system of heating are the decided advantages of the warm-air furnace system which occupies from 5 per cent to 8 per cent of the space in a basement, is easy to operate, is moderate in fuel consumption (well installed furnaces require less fuel than is required to heat by the direct radiation system because of the much greater average efficiency of good furnaces as compared with standard types of house heating boilers), low in cost of maintenance, durable (good furnaces last from twenty-five to forty years), moderate in first cost (a trifle less than cost of direct steam radiation system).

The best heating results in residences are obtained with indirect systems of heating when they are combined with a formal system of ventilation—consisting of vent ducts, vent registers, ventilating shaft, etc.—and it is a curious fact that the superior heating results are obtained without an increase in fuel consumption in the case of the warm air furnace. In residences there is actually a reduction in the fuel consumption when a proper ventilating system is installed with a warm air furnace system of heating, this being due to the fact that the free circulation of air through the rooms makes it unnecessary to force the fire to secure the desired heating results. To the prospective house owner it is of interest to know that the combined first cost of a good warm air furnace heating system, with a formal system of ventilation, does not exceed the cost of a direct hot water radiation system.—W. F. Colbert, M. D., in "House and Garden."

Reflectors Essential for Proper Lighting

By F. D. FAGAN.

There are a good many ways to do the same thing, but usually there is only one right way. So it is with electric lighting. For example: You would question the wisdom of a man who, in zero weather, starts to warm his house with all the doors and windows open. He might accomplish his purpose, but it would be expensive. So with much of the ordinary residence and store lighting.

The colored gentleman who stepped into a local supply store the other day and asked for "one of dem indecent lectric lights, mister," was not so far off, if he wanted a naked lamp, from a scientific standpoint, and a bare, naked lamp is at least a highly improper form of lighting.

Many lamps are simply hung from a cord without reflectors. The light from such a lamp is greatest on the walls of a room, and the ceiling is as well illumined as is that area beneath. Now, I never knew but one man who sat on the walls or the ceiling while he read the evening paper, and he was in a moving picture film. The man who attempts to light his home in this manner is second cousin to the one who tries to save the apple tree in the front yard from the frost by building a big fire in the house and leaving the doors open. It is safe to say that nine-tenths of the light is absolutely wasted, and it costs money.

Back Copies Wanted

We will pay 25 cents for a copy of the January, 1910 Architect and Engineer. The same price will be paid for one or more copies of the February, 1912 Architect and Engineer.

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The Influence of the "Disappearing Kitchen"

The following is an extract from the California State Board of Health's monthly report:

One of the problems of modern city growth is the condensation of the large, comfortable, family, country homes of our forefathers into homes 10 feet by 12 feet by 50 feet piled eight, ten or more high and flanked on either side by similarly condensed homes. These houses can have light only from windows in the front and back sides, and occasionally the diffused light from an air shaft. The only front yard is the fire escape, the only back yard is a narrow porch, and the limited air space made usable by an aerial clothes line. Under these conditions it is to be expected that disappearing beds, gas mantels, and other similar devices for economizing space will be popular. To meet this demand has come what might be termed the disappearing kitchen. Just as the spacious, well ventilated old bedroom, with its wide-chimneyed fireplace, has been superseded by the small, illy-ventilated room which serves in the added capacity of sitting-room by day, so the great, open, cheerful kitchens of old are being superseded by the twentieth century kitchenette. Limited facilities for cooking and serving meals mean limited range of foods which may be considered for the table. Through invention and clever application of the scientific principles of food preservation, this limit has been gradually extended until the tin-can dietary may be made to cover nearly all the ordinary demands for proper food, but the cook must know her trade or the family will severely suffer. It is probable that the "disappearing" house plays a large part in the present-day prevalence of many diseases and functional disorders, especially of the alimentary canal.

Specifications for the Treatment and Finishing of Concrete Floor Surfaces

By F. P. FOSTER, Jr.

OF recent years unusual attention has been given to the development of special materials for the perfection, protection, and decoration of modern building construction, with special reference to concrete surfaces. For the benefit of master painters as well as for architects, builders, and contractors, it is well to furnish detailed specifications relative to proper use of such materials. The subject of the present paper being the treatment of concrete floor surfaces, the writer will not attempt to describe any complete line of finishes for waterproofing or decorating concrete, but will be limited to the subject in hand.

While there are numerous materials for treating concrete floors on the market, made by various manufacturers, it is well, after experimenting, to learn the value of one special material and to become absolutely familiar with the best method of using it. One of the best known materials for this purpose is Glidden's Concrete Floor Dressing, which is made in the following colors: Light, drab, dark drab, terra cotta, tan, white, green, and also in transparent. This Floor Dressing has splendid covering capacity, the first coat covering from 300 to 350 square feet to the gallon, U. S. Measure, and 360 to 430 square feet to the gallon, Imperial Measure. The second or finishing coat will cover from 350 to 400 square feet to the gallon, U. S. Measure, and 430 to 500 Imperial Measure, and its cost of application is by no means excessive, as the cost of the material itself is approximately ½c per square foot to each coat; the cost of labor varying from 2¼ to 3¼c per square foot for the finished job which includes two coats, and any touching up which may be necessary, or about 7⁄8c to 1¾c per square foot for each coat, according to the rate per hour paid for the labor.

The transparent floor dressing is of particular value for the floors of factories,

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warehouses, mills, or any other floors which are subjected to extremely severe conditions of wear. In this connection it is essential to know that concrete floors should never be treated or dressed until they are thoroughly dry and well seasoned, and the dressing should be applied before they have been subjected to traffic or wear. In some instances it is necessary to use an acid wash or some other neutralizing medium before applying any dressing to concrete floors.

Glidden's Concrete Floor Dressing should not be used upon damp floors or floors which are subject to seepage. A coat of liquid rubber applied over the floor surface will overcome such conditions. This liquid rubber is a black, elastic bitumen, and is applied by means of a brush, over which an inch top coat of concrete, waterproofed with Glidden's Mass Waterproofing should be applied, using two and one-half pounds of waterproofing to each bag of cement used in the concrete aggregate, adding same after the water has been added. When the concrete is thoroughly dry and seasoned, two coats of concrete floor dressing should be applied in accord with the above specifications—this same specification may be used upon damp basement walls, which are subject to seepage, making a cement mortar veneer of one-half inch thickness, and applying two coats of Glidden's White Liquid Cement (Coating) upon the surface, after the same is thoroughly dry, in place of two coats of floor dressing. This specification will serve for damp basement floors and walls, and it produces a sanitary and light radiating basement.

Concrete floors having exceedingly fine, close texture, floated to a dense surface, which carry at times a semi-gloss finish, should be treated as follows: The surface should be gone over lightly with a Carborundum Rubbing Brick in order to establish a bonding surface that will enable the Concrete Floor Dressing to knit close to the floor structure, and practically become integral with it. This will prevent scaling and peeling of the dressing. The floors should, of course, be cleaned, thoroughly dry, and well seasoned before the first or priming coat of Concrete Floor Dressing is applied. Transparent floor dressing or any color desired may be used. It should be applied by means of a suitable brush, preferably a flat five or six inch white bristle brush. The dressing should be worked well into the pores of the concrete, spreading it well over the floor surface to develop a thin film. The temperature conditions during the periods of application and drying should not be under 70 degrees F. to insure the best results. The second coat should not be applied until the first or priming coat is thoroughly dry, which under proper temperature conditions requires from two to three days. The second coat should be brushed out evenly and uniformly over the surface in the same manner as one would apply a finishing coat of floor varnish, and it should be given from four to six days for thorough hardening. Two coats develop a very satisfactory result, though three coats should be used where floors are submitted to unusual wear, such as floors that are used as passages, aisles, and runways over which heavy trucking is done.

Concrete floors of exceedingly coarse texture should be cleaned, thoroughly dry and well seasoned before the first priming coat of Glidden's Concrete Floor Dressing is applied. Either the Transparent Floor Dressing or any color desired may be used, and should be applied by means of a suitable brush, such as is described for use on concrete floors of fine texture. The dressing should be worked well into the pores of the concrete in order to bond and bind it thoroughly. The temperature conditions dur-

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ing periods of application and drying should not be under 70 degrees F. to insure the best results. After the first coat is thoroughly dry all surface areas or spots which may show unusual absorption or penetration of floor dressing should be "touched up" or gone over with an additional coat of dressing, in order to prepare a uniform surface for the finishing coat. After the first coat is thoroughly dry, the finishing coat should be applied, brushing same out evenly and uniformly over the surface, as described in the specification for concrete floors of fine texture. The finishing coat should be allowed to harden from four to six days.

Concrete floors of irregular texture—by which expression is meant those floors which are made up of extremely fine and extremely coarse texture, laid irregularly, which is sometimes due to carelessness, but often due to unforseen conditions—should be given a joint application of the specifications described for concrete floors of fine texture, and concrete floors of coarse texture.

Concrete floors of normal, uniform texture should be cleaned, thoroughly dry, and well seasoned when the first or priming coat of Glidden's Concrete Floor Dressing is applied. In this instance, as well as others the transparent floor dressing, or any other color desired may be used, and it should be applied by means of a brush, and worked well into the pores of the concrete, spreading the surplus well over the floor surface to develop a thin film.

Floors which are laid in colors, such as terra cotta, green, etc., or where inert colors are mixed throughout the cement veneer or wearing surface, after being thoroughly cleaned, dried, and well seasoned, should be given two coats of Glidden's Transparent Floor Dressing, applied under the same conditions as is described for the normal or uniform texture.

"Fireproof Digest"

"Fireproof Digest" is a new publication that seems destined to fill a void in the field of monthly semi-technical trade and building magazines. Unquestionably there is call for such a publication, for there is no livelier subject agitating the minds of the American people today than the cause of fire protection. The editors of "Fireproof Digest" have summarized the paper's mission well in the slogan, "A hot message with a hot moral for cool thinkers." The book does not appear to be tied down to any "interests," which is likely to aid it materially in the battle for success. With such forceful writers as Mr. F. W. Fitzpatrick, it is bound to be recognized. Its suggestion of a national holiday to be called "Fire-Prevention Day," is a splendid one, and has our enthusiastic endorsement.

Lumber for Forms

The character of the work and the lumber markets generally determine the kind of lumber to use for forms. For very nice work where exceptionally smooth surfaces are required, as in mouldings and other ornamental designs, white pine is the best material to use. For ordinary work, it is too expensive and too soft to be durable where forms are used over and over again. Spruce, Norway pine, and Southern pine are generally the most available. North Carolina pine makes excellent sheathing. Spruce, in sections where it is readily obtained, is perhaps the best material for studs, joists and posts. Hemlock is too coarse grained for sheathing and is unsafe for supporting heavy framework. The hard woods are too expensive to work.—Building Age.

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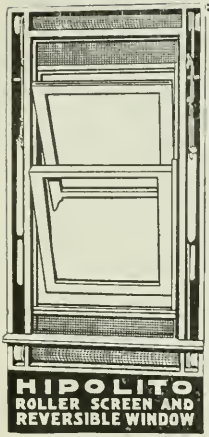

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State Architect's Office Abolished

The Engineering Department of California, under State Engineer Wilbur F. McClure, is to have no State architect hereafter. Architect firms in the State are in the future to be consulted for each new building as it is required. A superintendent of construction, at a salary yet to be decided upon, will be named as a permanent officer in the State Engineering Department.

"It is a difficult matter," said McClure, "to obtain a high-class architect for $4800 a year. I think our new plan of having consulting architects will work out much better and to the greater advantage of the State. They will not be on the permanent pay roll at all. They will be remunerated only for actual service."

McClure has appointed the firm of Allison & Allison of Los Angeles as consulting architects for the southern part of the State. A San Francisco firm will be appointed for the north.

San Diego Building Ordinance

The City Council of San Diego has passed a new building ordinance, the chief provision of which restricts the height of buildings to 100 feet. The ordinance is likely to be severely tried when the proposition of Louis J. Wilde to erect two ten-story buildings in the business section of the city comes up for consideration. The law was prepared by an advisory board, consisting of John L. Bacon, John Campbell, and Architect C. E. Quayle.

State of Arizona Contracts for the G. Y. System

The popularity of the G. Y. system of pouring concrete by gravity continues. One of the largest contracts recently made by Parrott & Co., is with the State of Arizona Engineering Department to use the system in all future concrete construction work in that State. This is a blanket license and one that involves a very large yardage of concrete.

Dutton Company to Design Ferry Building Addition

The L. B. Dutton Company of San Francisco has been selected to prepare plans for the two new ferry buildings which it is proposed to build adjacent to the present building and for the viaduct from the second story of the ferry building to the north and south sides of Market street.

The architect's compensation was fixed at 5 per cent of the cost of the work. This fee will cover everything, including architectural supervision during construction.

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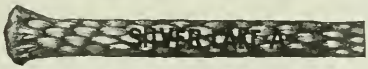

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Some Industrial Information Worth the While

New Custom Ore-Testing Plant

Smith, Emery & Co., inspecting engineers and metallurgists of San Francisco and Los Angeles, announce that they have ready for custom work one of the best equipped ore-testing plants in the country. The heavy machinery is being installed in separate buildings in the rear of the main building on their property in Los Angeles. The location of the plant at 245 South Los Angeles street is close by a spur track, and is within two to four blocks of the leading hotels and office buildings. The machinery now set up consists of a full sized stamp mill, elevators, amalgamation plates, concentrating table, classifiers, pumps, cyanide leaching and agitating plants, filter, tube mill, large and small crushers and grinders, furnaces, etc. A full equipment of preliminary apparatus has also been installed and other machinery will be added as rapidly as there is a demand and it can be taken care of. All analyses of rare metals will be performed by special analysts in the general chemical laboratories of the establishment. A complete plant of this kind has long been needed in Los Angeles.

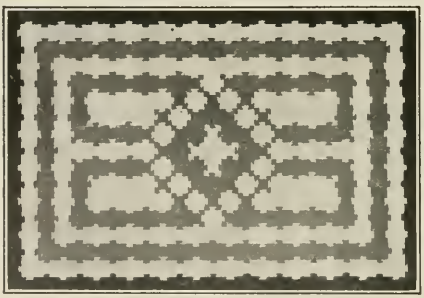
Interior Woodwork Job Completed

The interior woodwork for the new San Francisco Hall of Justice and City and County jail is about completed, and William Bateman is ready for another $80,000 plum to fall on his side of the fence.

This concern had several other good sized orders last year and were enabled to run full force during 1911. The New Hotel Sutter Cafe, St. Paul's Roman Catholic Church in the Mission, and other notable jobs helped keep busy a plant which covers about one square block, lying between Eighteenth and Mariposa and Bryant and York streets. While not the largest, it is one of the most complete and best equipped of its kind on the Coast. It has its own power plant with a 250 H. P. engine and two Atlas boilers with automatic feeds, a blacksmith shop, sanding machine and three veneering presses capable of pro-

THE ORIGINAL

INTERLOCKING RUBBER TILING



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Odorless
Noiseless
Sanitary
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TWENTY YEARS of Manufacturing Experience Places OUR TILING Above the Plane of Experiment

More Durable Than Marble or Mosaic

Hundreds of Banks Are Using It—Each One a Satisfied Customer

Any combination of colors or design, to harmonize with interior decorations, can be made to suit the taste of the most exacting. Correspondence solicited.

NEW YORK BELTING AND PACKING CO., Ltd.

NEW YORK CHICAGO PHILADELPHIA ST. LOUIS BUFFALO SPOKANE PORTLAND

129-131 First Street, SAN FRANCISCO

Mackenzie Roof Co.

425 15th St., Oakland
Phone Oakland 3461

ducing the largest size veneered panels to be found in San Francisco.

Mr. Bateman has been continuously in business in San Francisco since 1876. By a triple coincidence his street number corresponds with that of the Panama opening and the Exposition year, and "1915" is his most timely slogan.

Adds Floor Department

It may not be generally known that the Dieckmann Hardwood Company has lately added to its extensive hardwood plant a flooring department which is making a specialty of supplying flooring of all kinds, from plain strips to most intricate designs of parquetry, naturally, combining in the latter many beautiful hardwoods. Flooring strips have been made on this Coast heretofore, but mostly by antiquated and imperfect machinery. In establishing the new plant the above firm has spared no expense in supplying saws, planers and other machinery to adequately handle the work to best advantage, not only in quality but in quantity. We believe this industry should be patronized by all those interested in Hardwood flooring or parquetry flooring of any kind. The product of this factory can stand on its own merits however, it being an industry of the Pacific Coast and particularly of this city, it should have the support of all those who are interested in our development.

THE ROEBLING CONSTRUCTION Co's

System of FIRE PROOFING and EXPANDED METAL LATH

HOME INDUSTRY
Made in San Francisco

EXPANDED metal lath manufactured in rolls 150' long, 25" and 33" wide, or sheets if desired, plain, painted or galvanized. Crimped metal lath and wire lath for exterior plastering.

Everything in the lath line for architect, owner, plasterer and lather.
Information, prices and samples cheerfully given

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SEATTLE NEW YORK SAN DIEGO CHICAGO PUEBLO PHILADELPHIA BIRMINGHAM MONTREAL PITTSBURG GLASGOW

Tenement House Legislation

An organization of property owners has been perfected in San Francisco for the purpose of securing more favorable legislation relative to the construction of apartment and tenement houses and to secure legal interpretation of the provisions of the State tenement house law, especially that portion of the act relating to the 7-foot basement, commonly styled the "English" basement, and to bring about a better understanding between themselves and other organizations having the regulation of the public health.

At a recent meeting, the chairman, Architect C. O. Clausen, introduced State Senator Lester G. Burnett, the father of the act, who gave a history of the bill, during which he stated that the bill had not been put before the Senate until it had been carefully considered in all its details and the advice of architects, builders, property owners and real estate men from all sections of the State had been obtained.

Miss Alice Griffith, of the Housing Committee, was introduced and made the position of that body as regard to the State tenement house law very clear. In part Miss Griffith said: "The main object of the Housing Committee is to secure plenty of light and fresh air for the occupants of the tenement houses, and not to work hardship on the owners of the buildings." She pointed out that under the Act of 1911 that this State has the minimum sizes in all light wells and that the prescribed size of lot-line courts were smaller than those required in any other State passing recent tenement house laws. She strongly advocated that a more stringent State law be passed looking to the future when nothing but brick or concrete tenement houses could be erected. Miss Griffith stated that many builders were now erecting apartment houses of the three-story and basement frame type, which were, to all intents and purposes, four-story buildings. The plans upon which the building permit was secured showed no living apartments in the basements, and made no provision for the extension of the light wells into the basement, but when the building was complete it was found that in many cases living-rooms had been put in the basements and were being occupied. The continuance of such a practice is what the Housing Committee is striving to stop.

Brownhoist Patent Suspended Bins

The Brown Hoisting Machinery Company of Cleveland, Ohio, has published an interesting catalogue of the Brownhoist Patent Suspended Bins which

DINING ROOM PANELED IN MAHOGANY

Write for our booklet telling how to secure a Beautiful Hardwood Interior at the cost of a cheap softwood job.

E. A. Howard & Co.
20 Howard St., San Francisco

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ROBERT W. HUNT & CO., ENGINEERS

BUREAU OF INSPECTION TESTS AND CONSULTATION

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CEMENT INSPECTION

INSPECTION OF STRUCTURAL AND REINFORCING STEEL

REPORTS AND ESTIMATES ON PROPERTIES AND PROCESSES

CHEMICAL AND PHYSICAL TESTING LABORATORIES

should appeal to contractors and others engaged in power plant installations. The book describes in detail the various features of the bin, and a number of photographs illustrate some recent installations. Half-tone cuts of several Brownhoist machines also are shown. These machines work in connection with the Suspended Bin in power plant installations. The Pacific Coast branch office of the Brown Hoisting Machinery Company is in the Monadnock Building, San Francisco.

Robert Hunt & Co., and What They Do

Messrs. Robert W. Hunt & Co., engineers, whose advertisement appears elsewhere in this issue, announce a notable increase in the equipment of their physical laboratories in San Francisco.

They have recently installed a large Riehle testing machine for making tensile and compression tests. The capacity of the machine is 200,000 pounds, making it the largest one of its kind in a commercial laboratory west of Chicago. This is a matter of interest to the many of our readers who require tensile strength tests of iron, steel, and other materials, or compression tests of concrete, stone, wood, etc., in which line of work Robert W. Hunt & Co. are well known specialists and experts.

They also announce the installation of a standard Deval abrasion machine for making tests of broken stone for road purposes, as specified and recommended by the Bureau of Public Roads of the United States Department of Agriculture. This is believed to be the only machine of its type in a commercial laboratory on the Pacific Coast, and it is now at the service of engineers and others engaged in road construction.

The announcement should be of particular interest to the various city and county engineers throughout the Pacific Coast States in this era of "good road" building, and we take pleasure in placing it before them for their attention.

It is interesting to note the wide scope of the service offered by this firm of engineering specialists. During the twenty-five years of its existence, so we learn from its local representative, the field of its operations has widened until now resident members of the organization are permanently located at a dozen or more offices in North and South America and in Europe. Evidence of their service can be seen all over the world. They were pioneers in the establishment of a bureau of tests and inspections and consultation.

Their long and successful experience is an assurance that any work entrusted to their charge will receive as thorough and careful attention as it is possible to secure from a technical organization.

They offer their services in all matters pertaining to the metallurgy, manufacture, testing and inspection of steel and iron products; also in all matters relating to the manufacture and use of Portland cement, including examinations for determining extent and value of natural deposits of cement making materials.

They offer the services of their staff of engineers and chemists to State and municipal governments for the drawing of specifications for supplies and materials of construction, which specifications are made safe and conservative, embodying requirements suggested by the latest scientific tests, and being in accord with the best methods of manufacture.

They test and inspect every variety of railroad material—rails, splices, tie-plates, bolts and spikes; also cars and locomotives, and every description of railroad supplies. For this work they have experts permanently employed at practically all the steel mills in the United States manufacturing these products.

They maintain another staff of experts to test and inspect creosoted or otherwise treated piles, ties and timber.

They inspect all materials entering into the construction of bridges, buildings, viaducts, steel stacks, towers and tanks.

They have men located permanently at all prominent steel mills and foundries where material is rolled or cast.

TESTING & INSPECTING MATERIALS OF CONSTRUCTION
CEMENT—CONCRETE—STRUCTURAL IRON & STEEL—PIPE—RAILS
ROAD MATERIALS, ETC.
PHYSICAL & CHEMICAL LABORATORIES
R. E. NOBLE & CO.
INSPECTING & TESTING ENGINEERS
217-18 HUMBOLDT BANK BLDG., SAN FRANCISCO, CALIFORNIA
EASTERN REPRESENTATIVES—HILDRETH & CO., NEW YORK
CHICAGO PITTSBURGH PHILADELPHIA ST. LOUIS ENGLAND CANADA GERMANY BELGIUM

They have inspectors permanently located where they can be detailed for work at all structural steel shops, where they supervise the fabrication and see that holes are correctly drilled and punched; that rivets are tight and have good heads; that the members are straight and are of the dimensions called for in plans and specifications, and that they are properly painted. They also furnish experienced men to supervise the erection of structural steel.

They maintain another corps of experts at pipe foundries and pipe mills to test and inspect either cast or wrought iron or steel pipe and specials, hydrants, valves and fittings.

The quality of Portland cement is notoriously subject to variations seriously affecting its strength, soundness and hardening properties. These variations can only be detected by inspection and test. Robert W. Hunt & Co. make a specialty of this protective work.

They have men in constant attendance at most of the steel mills rolling plain or deformed sections of steel bars used in reinforced concrete work. At these points they are able to handle inspection service at a tonnage rate that is very reasonable.

They also maintain chemical laboratories, fully equipped with the most modern apparatus for scientific investigation

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and determination of the various chemical characteristics of materials. All of the work in the chemical laboratories is performed by thoroughly experienced and permanently employed chemists and metallurgists.

They make separations and analyses of paint, and analyses and determinations of British thermal units of coal, coke and other fuels.

They make investigations and tests of all kinds of paving materials.

Their charges for all of these services are very moderate, and that the protection afforded by them is considered indispensable by careful engineers, architects and others throughout the world, is evidenced by the immense and ever-increasing volume of their professional service.

Big Order for Medusa

The Sandusky Portland Cement Company, manufacturers of the well-known Medusa compound, write under date of March 9:

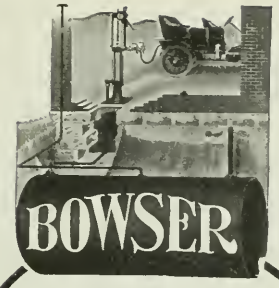
"We have just received an order for 100,000 pounds of Medusa waterproofing for use in the New York Dock Company's job at Atlantic Basin, Brooklyn; 5000 barrels Medusa waterproofed white Portland cement for use in the Woolworth building, New York City; 25,000 barrels of Medusa gray cement for use in the Central High School building, Minneapolis, and 3000 barrels of Medusa white Portland cement for use in the same building."

Metal Roofing

A catalogue issued by Messrs. Meurer Brothers Co., Brooklyn, N. Y., contains rules, specifications, tables of weights, sizes and quantities required in the construction of a roof covered with metal roofing. It also contains a treatise on natural ventilation with tables of exhaust and flow, wind velocity, pressure, etc. Added to this are a number of well executed half-tones of buildings located both in the East and West. The catalogue is a useful one to have in reference files as it is more helpful than much of the advertising matter published.

Big Sheet Metal Contract

The Hibernia Sheet Metal Works (Jos. Schwartz, proprietor) of 219 Seventh street, San Francisco, have just completed the sheet metal work on the new John Deere Plow Works, at 651 Brannan street, this city. Mr. Schwartz has been in the sheet metal business in San Francisco for over twenty years, being formerly located in the old Hibernia Bank building, at Jones and HcAllister streets, San Francisco.



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To make sure your instructions for handling and storing oils and volatiles will be fulfilled specify

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Storage Systems

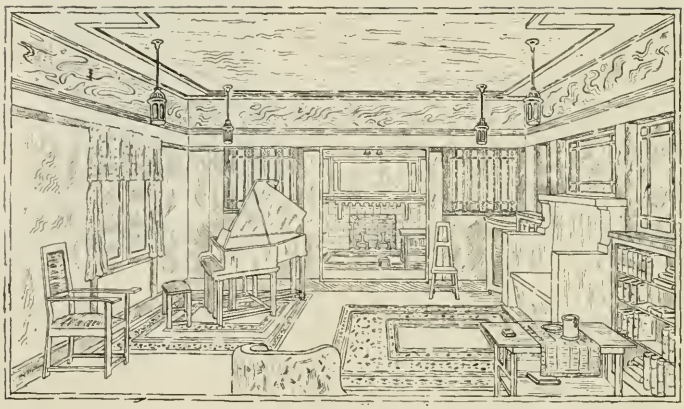
The Bowser has been the standard for twenty-seven years. It is made in all styles and sizes to meet every condition—Prices range from the lowest price to the best.

Constant investigation along the oil storage line for so many years has placed us in a position of authority on this subject. We have accumulated much information of importance to architects and contractors. If you are interested we will be glad to forward our complete set of bulletins No. 107 upon request.

The Bowser is listed by the National Board of Underwriters, endorsed by architects and tested by time.

S. F. BOWSER & CO.
(Incorporated)
612 Howard St., San Francisco

Ft. Wayne, Indiana; Minneapolis, St. Louis, Chicago, New York, Boston, Philadephia, Atlanta, Dallas, Toronto



Plan for Living-room, Showing the Co-Ran Bed as a Window Seat
From Drawing by A. Merril Bowser, Architect, Oakland, California

Something New in Disappearing Beds

For the architect who has worried his brain over the many items of expense involved by the modern requirements in apartment houses, hospitals, club houses, residences, etc., of concealed beds which are both sightly and sanitary, and sleeping porches which do not mar the architectural appearance of a building, nor involve too large an outlay, a combination such as is offered by the Co-Ran bed, of a disappearing bed and sleeping porch combined, both simple and inexpensive, and yet meeting all requirements of health and comfort, is a veritable godsend.

The inventor (who was a leading architect) slept in one of these beds for over a year before he attempted to put it on the market, so it can be said to be practical and practicable. All the mechanical and technical details of installation, together with sectional plans, have been worked out by him, and necessary dimensions and blue prints are at the service of any architect who wishes to incorporate same in his own drawings.

Owing to the outside porch being utilized for the concealed bed, the size of a bedroom is materially increased. This, alone, is an important feature, and one which will commend itself to architects. Also the absence of expensive wall furniture to conceal the beds, and the moderate cost of the porches, will make it feasible to adopt it in buildings where the expense would preclude same under former circumstances. The only indication of a Co-Ran bed in a room is a comfortable window seat—itself an addition and ornament.

The question of the desirability of sleeping porches and the necessity of economizing space by using disappearing beds has already been decided affirmatively. The point for the architect to decide then, is whether this combined bed and sleeping porch meets all requirements. It was accorded a most favorable reception in Los Angeles at the February exhibit of the Architectural League Exhibition, and signed orders were placed for 600 Co-Ran beds, including one order of 200 for a new apartment house.

Architects and contractors are invited to inspect the bed at either the San Francisco office of the Fresh Air Bed Company, 202 Commercial building, 833 Market street, or at the Oakland showrooms, 1764 Broadway. A working model will be sent to any architect or contractor's office upon request.

The Co-Ran Fresh-Air Bed

A combination of Bed, Sleeping Porch and Window Seat combined

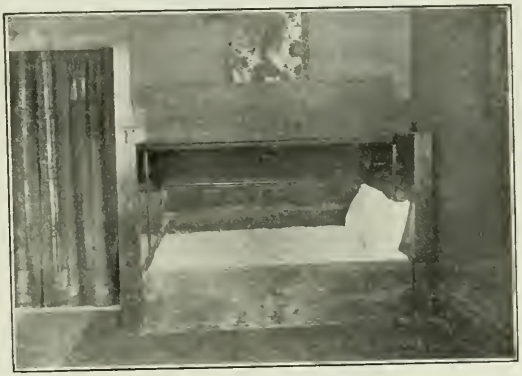
IN ANY FINISH

Perfectly adapted for either Old or New

Apartments
Hospitals
Club Houses
Residences
Etc.

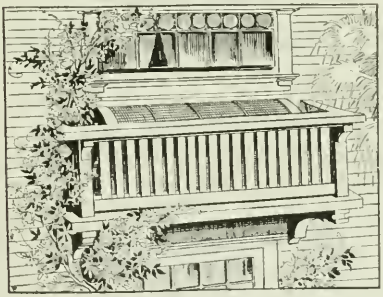
Electrically Lighted

Wind, Rain, Fly and Mosquito Proof.



SHOWING THE CO-RAN FRESH AIR BED READY FOR USE. DURING THE DAY THE FOLDED SHELF SHOWN ABOVE FORMS AN ATTRACTIVE HALL AND ALCOVE SEAT.

Highly endorsed by architects and doctors.
More than pays for itself in space, labor and material saved.
No more cold and leaky sleeping porches.
No moving of furniture in room at night.
Bed has steel coil springs and can be moved to any part of the house.
Most comfortable Bed on the market.



SHOWING THE APPEARANCE OF THE CO-RAN FRESH AIR BED ON THE OUTSIDE OF THE HOUSE. OF COURSE, NO PART OF THE BED IS VISIBLE FROM THE STREET.

The FIRST Order A BIG ONE!

At the February Exhibition held in Los Angeles of the Architectural League of the Pacific Coast, the first public demonstration of the Co-Ran Fresh Air Bed was made: and orders for 600 beds were placed during the display.

From 4 to 7 rooms can be added to an apartment house by using Fresh-Air Beds.

Call and inspect at either office —or telephone and working model will be sent to your office.

The Fresh-Air Bed Company, Incorporated

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833 Market Street, Room 202
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Oakland
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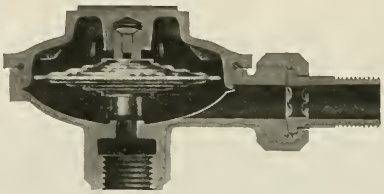

Sectional view of the **Dunham** Radiator Steam Trap.

THE DUNHAM RADIATOR TRAP
makes good on these five essential points.

1—POSITIVELY PREVENTS STEAM WASTE.
2—STOPS THAT CRACKING NOISE.
3—KEEPS THE RADIATOR FULL OF STEAM.
4—UTILIZES EXHAUST OR WASTE STEAM.
5—WON'T CLOG UP OR WEAR OUT.

Dunham traps in your heating system guarantee economy in fuel, (50% sometimes, always 25-40%) noiseless operation and highest efficiency. Eight years in actual service prove these claims. Offices in all principal cities. Catalog free on request

C. A. DUNHAM CO., Inc
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San Francisco Office, 637 Monadnock Building. Phone Sutter 2548

NOTE. The new Dunham Air-Valve will be ready for the market April 15th. Most practica valve made for air-line service. Dunham quality throughout.

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Hydrex Felt and Engineering Company's products — **Tabor Sash Fixtures** — **Cross Horizontal Folding Warehouse and Garage Doors**—**Meeker Elevator Doors**—Lavigne's Hot Water and Steam Radiator Valves — Swedish Venetian Blinds—Thorne Hold-Fast Store Front Bars—**Energy Dumbwaiters**—Hart & Cooley's Metal Lockers—Insulite & Aquabar Waterproofing Compound—Monarch Metal Weather Strip—**Hollow Steel Doors, Windows, Drawn Bronze, Brass and Steel Mouldings**—Golden Gate Cement — **American Mason Safety Tread**—American Enameled Brick & Tile Co.'s Product—Backus Gas Grates—Suction Oil Burners and Regulators — Lord & Burnham Boilers — Rabok Metal Paint.

356 MARKET STREET

San Francisco, Cal.

Architects for Oakland's New Schools

City Architect J. J. Donovan of Oakland has announced the following list of architects selected for the various new school buildings which are to be erected in Oakland from the proceeds of the recent bond issue. Architect Donovan will supervise all construction and contracts for the work will be let through his office.

Longfellow School, 39th and Market streets, $100,000. Architect C. W. Dickey, Central Bank Bldg., Oakland. Nine-room addition. Class "A" construction.

Thirteenth Ave. School, East 13th Ave., between Cameron and Millbury, $75,000. Architect, Lewis S. Stone, Macdonough Bldg., Oakland. Two-story and basement, reinforced concrete. 18 rooms. Note: Only 8 rooms will be erected at this time and 10 added later.

Emerson School, 49th St. and Shafter Ave., $160,000. Architect, John Galen Howard, 604 Mission St., S. F. Two-story and base. Class "A" construction, 18 rooms.

Durant School, West St., between 28th and 29th streets, $160,000. Architect Louis C. Mulgardt. Chronicle Bldg., S. F. The building will be two stories and basement. Class "A" construction, 18 rooms.

Washington School, Shattuck, between 59th and 61st streets, $100,000. Architect, Lewis P. Hobart, Crocker Bldg., S. F. Class "A" construction, 9 rooms, assembly hall and kindergarten.

Lockwood School, Damon Ave. and County Road, $75,000. Architect, Lewis P. Hobart, Crocker Bldg., S. F. The building has been designed for an Intermediate High School. Two-story and base. Class "A" construction, 18 rooms. Note: Eight rooms will be built at once and 10 rooms added later.

Fifty-fourth Street School, 54th and Market streets, $65,000. Architect, F. D. Voorhees, Central Bank Bldg., Oakland. The building will be one-story and basement. Class "A" construction, 8 rooms.

Park Street School, Park and Division streets, $75,000. Architect F. D. Voorhees, Central Bank Bldg., Oakland. The building will be two-story and basement. Class "A" construction, 18 rooms. Note: Six rooms only will be built at this time, 12 will be added later.

Perry Street School, Perry and Grand Ave., $85,000. Architect Sidney B. Newsom, Nevada Bank Bldg., S. F. The building will be for primary and grammar school purposes. Two-story and base. Class "A" construction, 18 rooms.

Dewey School, Carrington and 40th streets, $100,000. Architect W. J. Mathews, 959 Broadway, Oakland. Two story and basement. Class "A" construction. Intermediate High School. Note: Twelve rooms will be erected at once and 6 added later.

College Ave. School, College Ave., near Shafter, $100,000. Architect, Walter D. Reed, Oakland Bank of Savings, Oakland. The building will be two-story and basement. Class "A" construction, 18 rooms. Note: Twelve rooms will be erected at once and 6 added later.

Bay School, San Pablo Ave., $15,000. Architect not selected.

Peralta Heights School, Peralta Heights, $45,000. Architect not selected.

Allendale School, Oakland, $10,000. Architect not selected.

Reg. U. S. Pat. Off.

Protect Your Concrete or Stucco

I want you to know ***Bay State Brick and Cement Coating*** is being specified by the leading architects and contractors not only as a coating on cement, stucco, and brick surfaces to protect them against moisture, but on high grade interior work on both wood and plaster.

You know how necessary it is to protect concrete surfaces against dampness. My coating is damp-proof, a fire retarder and gives a pleasing appearance without destroying the texture of concrete. It is the best coating for mills, factories, bridges or stucco houses.

Write for particulars about Bay State Brick and Cement Coating. Address for booklet No. 20

WADSWORTH, HOWLAND & CO., Inc.

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AND LEAD GRROBERS

82-84 Washington St. Boston, Mass.

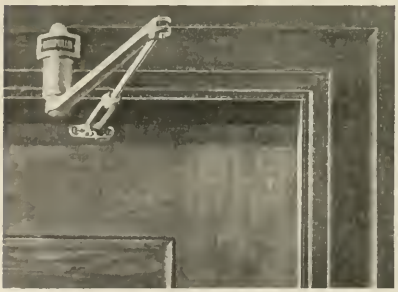
Distributing Agents —Hiram W. Wadsworth, Chamber of Commerce Building, Pasadena, Cal.; Timms, Cress & Co., Portland, Ore.; F. T. Crowe & Co., Spokane, Seattle, Tacoma, Wash.; R. N. Nason & Co., San Francisco, Cal.

Right-hand Door. No Brockets Needed for Oval, Round-headed or Any Other Door

A Concealed Liquid Door Check and Spring

The accompanying photographs show the Rischmuller concealed liquid door check and spring, which is having such a demand in San Francisco and the Bay cities. It is a home product in every sense of the word—being the invention of a pioneer San Francisco contractor, who has for years maintained factories for his products both in San Francisco and Oakland. The Rischmuller door check and spring is unquestionably the most desirable one on the market, and the fact that it is concealed adds greatly to its desirability. It costs no more than the old fashioned check which is not concealed, and possesses far greater strength.

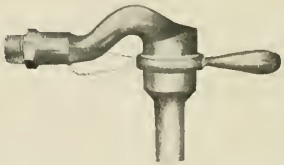
The check is in use in many apartment houses and flats as are also the Rischmuller door openers and closers—both money savers for the owner. A postal card addressed to Mr. G. Rischmuller, 3442 Nineteenth Street, San Francisco, or a telephone call, will be answered by a personal visit or detailed printed information.



Right-handed Door Swinging Out Into Vestibule. Note the Absence of Brockets

The Hajoca "QUICK" Faucet

Is Instantaneous and Anti-Splash in Aetion



By half turn of lever a solid stream of water is delivered from this Faucet without a Splash.

The 20th Century time saving boon for every kitchen.

Write or telephone to us and we will show same.

HAINES, JONES & CADBURY CO.
MAKERS OF PLUMBING SUPPLIES
1130-1144 RIDGE AVENUE PHILADELPHIA
BRANCHES - SAVANNAH AND SAN FRANCISCO

ARCHITECTS!

You have been having trouble with Dry Bonds in all Concrete Work. We can prevent this with **Master Builders Concrete Filler.** Master Builders Filler will waterproof Concrete and make a surface hard as iron. Does not absorb oil, is used largely for floors with heavy wear; expense nominal.

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Rib Lath and Rib Studs

The Trussed Concrete Steel Company has brought out the fourth addition of its valuable and instructive booklet relating to Rib Lath and Rib Studs for plaster and stucco in sidings, partitions and ceilings, furring hollow walls and hollow partitions. The introductory matter consists of comments intended especially for the attention of builders, and following these are descriptive particulars relating to the forms of construction above referred to. There are specifications for cement stucco and for metal lath, with detail sketches showing Hy-Rib on the outside and Rib Lath on the inside walls of residences. There is also considerable about "overcoated" houses, a subject that is of timely interest in these days. The bulk of the illustrations are half-tone engravings showing buildings in connection with which the company's product has been used.

Splendid Showing of American Pulley Company's Product

Recent comparative tests made by the Henry S. Spackman Engineering Company, of Philadelphia, of pressed steel and cast iron sash pulleys, show conclusively that perfected steel sash pulleys, as now made standard by the American Pulley Company, far excel in wearing qualities cast pulleys as today manufactured by the most responsible makers. The report covers eight pages, and makes interesting reading, showing results of enduring tests, comparative between specimens of the American Pulley Company's sash pulleys and other manufacturers' products.

A Record-Breaking Order

The Isthmian Canal Commission of the United States Government has specified Bitumastic Solution and Enamel for the interior covering of the forty-six interlocking gates of two leaves each, included in the Panama Canal construction.

Three million four hundred and thirty-four thousand square feet of surface will be covered with this protective paint, at a total cost of well nigh half a million dollars. The specifications read as follows:

"The surface inside of the leaf shall be treated as follows: Before shipment from the shops in the United States, all metallic surfaces which after erection will form the interior surfaces of the air and water chambers, including the girders, sheathing, beams, intercostals, vertical frames, piping, etc., shall receive as a first coat one coat of bitumastic solu-

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tion made by the American Bitumastic Enamel Company of Philadelphia, and applied cold to the satisfaction of the manufacturers. An exception from this shall be made in the case of the girders at the bottom of the gate, which shall receive a thin shop coat of the red-lead paint specified below, to be replaced by a cement covering which shall be applied as specified in detail hereafter. The upper surface of all the other horizontal girders in the interior, and all vertical surfaces to a height of 10 inches above the centers of the girders shall, after the final erection of the gates, be coated with bitumastic enamel made by the manufacturers named above and applied hot by them in their most approved manner. All other interior surfaces shall, after the gates are erected, receive a second coat of bitumastic solution applied cold."

Bitumastic solution and enamel are known and used all over the world. They have been applied to 12,000 vessels, and to many of the largest iron and steel structures in all parts of the globe.

The solution is a brilliant black bituminous paint containing no oil, turpentine, benzine, etc., and is guaranteed free from coal tar and its objectionable constituents. It was specified and used inside and outside of all gate valves and hydrants of the San Francisco auxiliary salt water fire system.

Over one hundred miles of the Producers Transportation Company's 8-inch pipe line from Coalinga and Kern River oil fields to tidewater were painted with two coats of bitumastic solution, and eleven miles were coated with one coat bitumastic solution and one coat bitumastic enamel.

Bitumastic solution possesses to a remarkable degree the qualities necessary to a successful anti-corrosive coating; it adheres firmly to the metal and is impervious to moisture, acids, alkalies, sulphurous gases, chemical fumes and salt or fresh water.

The solution dries in about two hours to a hard yet elastic finish; can be subjected to extreme temperatures; will not crack or flake off, and retains its flexibility for an indefinite period.

Bitumastic enamel is applied hot over one coat of bitumastic solution, and it is a successful waterproofing compound for all concrete structures. It adheres firmly to concrete and is guaranteed to be absolutely waterproof. It is also used for steel water tanks, standpipes, gas and water mains, hydrants, etc.

The American Bitumastic Enamel Company controls all rights for the manufacture of these preparations in American countries. The agents for the Pacific Coast are Hill, Hubbell & Co., Fife building, San Francisco.

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Purchase of Big Paper Plant

The Paraffine Paint Company have purchased the large paper mill at Antioch, California, and are said to have paid approximately a half million for the property, says the Antioch Ledger.

"A deal that involves practically a half million dollars, and is by far the largest that ever took place in Antioch, was the sale this week of the California Paper and Board Mills at Antioch, to the Paraffine Paint Company of San Francisco, who are well known as manufacturers of roofing material, building papers, sheathing, deadening felts, etc.

"It is a well-known fact that the Paraffine Paint Company officials have a reputation for progressiveness, and there is little question but that they will make the paper mill second to none in the West. This plant is equipped with the latest machinery known in the paper-making business, and will probably be increased to a still larger extent in the future. The mill is—and always has been—Antioch's best and most prominent industry.

"The Paraffine Paint Company's main plant is at Paraffine, California, which now covers over twelve acres of ground. With this late purchase an addition has been made to their tremendous capacity which will place this company in the front rank as the largest manufacturers of roofing and building papers in the world."

An Automobile Map

C. F. Weber & Company, 365 Market street, San Francisco, are sole distributors for a road map that will be prized by every California automobile enthusiast. It is a pocket edition of an automobile map, 36 x 54 inches, and embracing 100 miles around San Francisco. The map embraces the following features:

1. All main roads in heavy black lines easily found.
2. Secondary roads in lighter lines.
3. Township and section lines.
4. Early Mexican Grants or Ranchos.
5. All Railroads, including Electric Roads.
6. Area flooded by Sacramento River in January, 1909.
7. U. S. Forest Reserves.
8. Rivers, Lakes, Towns, etc.
9. Guide Arrows at margin indicating where all roads lead, with names of adjacent largest town, indicating distance and direction.

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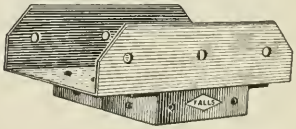

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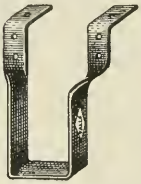

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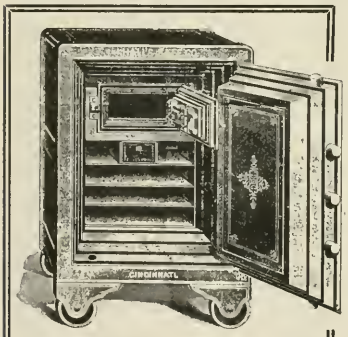

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